

Université de Montréal

Explaining Legal Norm Transmission Using an Epidemiological Model:  
The Case of Employment Drug Testing

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Cette thèse intitulée :

Explaining Legal Norm Transmission Using an Epidemiological Model:  
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## RÉSUMÉ

Dans cette thèse, nous construisons un modèle épidémiologique de la dissémination de normes juridiques. L'objectif est d'expliquer la transmission de normes juridiques américaines régissant les tests de dépistages pour drogues au travail vers le Canada ainsi que la propagation subséquente de ces normes à travers la jurisprudence canadienne.

La propagation des normes régissant les tests de dépistages pour drogues au travail sert donc à la fois de point de départ pour une réflexion théorique sur la transmission de normes juridiques et pour une étude de cas empirique.

Nous partons de la prémisse que les explications du changement juridique, telles celle de la transplantation et celle de l'harmonisation, sont essentiellement métaphoriques. Ces métaphores explicatives fonctionnent en invitant des comparaisons entre les domaines connus et inconnus. Quand ce processus de comparaison est systématisé, la métaphore devient un modèle.

Dans la thèse, nous appliquons cette procédure de systématisation afin de transformer la métaphore de la propagation virale en modèle épidémiologique. Après une revue de la littérature sur les épidémies sociales, nous décrivons les éléments pertinents de la théorie épidémiologique pour, ensuite, les transposer au domaine juridique. Le modèle est alors opérationnalisé en l'appliquant à une base de données composée de la jurisprudence pertinente (n=187).

Les résultats soutiennent les hypothèses du modèle. 90 % des décisions qui citent les sources américaines sont infectées selon les critères du modèle, alors que seulement 64 % des décisions qui ne citent pas de sources américaines sont infectées. Cela soutient l'hypothèse d'une épidémie dite de « réservoir commun ». Nous avons également démontré une corrélation positive entre la référence à ces décisions et l'état d'infection : 87 % des décisions qui citent des décisions qui réfèrent aux sources américaines sont infectées, alors que le taux d'infection parmi la population restante est de seulement 53 %. Les résultats semblables ont été obtenus pour les décisions de troisième génération. Cela soutient l'hypothèse selon laquelle il y a eu propagation à travers la jurisprudence suite aux contacts initiaux avec le réservoir commun. Des corrélations positives ont aussi été démontrées entre l'état d'infection et l'appartenance à l'une ou l'autre de sous-populations particulières qui seraient, par hypothèse, des points d'infection.

En conclusion de la thèse, nous avançons que c'est seulement après avoir construit un modèle et d'avoir constaté ses limites que nous pouvons vraiment comprendre le rôle des métaphores et des modèles dans l'explication de phénomènes juridiques.

**MOTS CLÉS** : méthodologie juridique, théorie du droit, épidémiologie, virus, droit du travail, dépistage de drogues, droits de la personne, droit à la vie privée.

## ABSTRACT

In this thesis, I construct an epidemiological model to explain the transmission of legal norms governing drug testing in the workplace from the United States to Canada and their subsequent spread across the jurisprudence. Employment drug testing norms thus serve as both the starting point for a reflection on how norms spread and a case study for the empirical testing of a theoretical model.

I begin with the premise that many explanations of legal change – such as transplant and harmonization – are grounded in metaphors, and then argue that such metaphors work by inviting the hearer to make comparisons between the familiar and the unfamiliar. When this process of comparison is systematized, the metaphor becomes a model.

This process of systematization is applied; extending a viral metaphor into an epidemiological model. After reviewing the literature on social epidemics, I set out those aspects of epidemiological theory that may be profitably transposed to the domain of law. I then operationalize the model by applying it to a data set composed of tribunal decisions (n=187) using computer assisted text analysis.

The results support the hypotheses generated by the model. 90% of decisions that cited American sources met the model's criteria for infection, compared to only 64% of those that didn't cite American sources. This supports the hypothesis of a common reservoir epidemic. Citation to those infected decisions was also positively correlated to infection: 87% of the citing population was infected,

compared to only 53% of the remaining population that cited neither an American source nor one of the infected decisions that cited an American source. Similar results were obtained for third generation decisions. This supports the hypothesis of a serial-transfer epidemic subsequent to contact with the reservoir. Positive correlation to infection was also demonstrated for particular sub-populations hypothesized to be act as points of infection and to a hypothesized vector.

In the conclusion, I argue that it is only after we have gone through the process of constructing a model and seen the strengths and limits of its application, that we have access to the full scope of the insights into the role of metaphors and models in the explanation of legal phenomena.

**KEYWORDS:** legal theory, epidemiology, virus, memetics, discourse analysis, qualitative research methods, labour law, drug testing, human rights, right to privacy.



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For Lukà and Élie



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## PREFACE

The genesis of this thesis can be found in a series of practical problems that I faced while working on a file that was eventually to clarify the law on employment drug testing in Quebec.<sup>1</sup>

My research on the caselaw quickly led me to discover that, in Canada, the tendency is to balance an employer's legitimate interest in having a workforce unimpaired by drugs and an employee's rights both to privacy and to equal treatment. The balance tips away from privacy rights and towards testing in workplaces where safety depends on alert personnel to make split second decisions and where impairment could thus have catastrophic consequences.

This seemed to me to be a fairly straightforward bit of reasoning – until I discovered that nowhere was there any evidence that urine screening for drugs had the slightest relationship to workplace impairment nor to accident rates. Indeed, some of the jurisprudence was quite clear on the fact that it was not possible to determine impairment from a urine test.

I thought that there had been some mistake. Surely our legal system wouldn't countenance forcing hundreds of thousands of Canadians to undergo the stress and embarrassment of peeing in a cup for their bosses without good rea-

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<sup>1</sup> *SCEP s.l. 143 et Goodyear Canada Inc.* (April 12, 2005, Arbitrator D. Tremblay, unreported) aff'd *Section locale 143 du Syndicat canadien des communications, de l'énergie et du papier c. Tremblay*, 2006 QCCS 2128, [2006] R.J.D.T. 617, D.T.E. 2006T-449, quashed in part on appeal: *Section locale 143 du Syndicat canadien des communications, de l'énergie et du papier c. Goodyear Canada Inc.*, 2007 QCCA 1686.

son? I set out to find the reason, and so began my adventures down the rabbit hole.

I quickly discovered that the Canadian norms governing workplace testing were grounded neither in good science nor in Canadian law. Rather, all of the indicia pointed South: our rules, apparently, came from the United States. This discovery led me to try to understand *how* exactly the norms governing employment drug testing came to Canada.

I thus found myself rather far from the practical problems involved in constructing an argument for litigation and I became increasingly frustrated with the impossibility of exploring these issues in the fora available to a practicing lawyer. Clients – quite rightly I should add – want results and not theories. And while judges and arbitrators are willing to sit through a brief introductory statement about the origins of a legal rule, they quickly get impatient to get to the dispute before them. With good reason, adjudicators generally prefer adjudicative facts to legislative facts.

I thus began my doctoral studies with a good idea of my research topic. Of course, it grew more detailed and somewhat broader in scope. The case of the spread of employment drug testing norms from the United States to Canada became merely one concrete example of the more general phenomenon of legal norm transmission. My dissatisfaction with existing accounts of transmission led to the viral metaphor, which I wanted to render as rigorous as possible – hence the work on an epidemiological model.



In its final form, this thesis may appear to be very far from the original problems I wanted to explore. Nevertheless, to me it is a direct extension of the early work I did contesting employer policies in arbitration and before the courts.



## INTRODUCTION

Canadian law came into contact with U.S. norms governing drug testing in the workplace and those norms then spread across the jurisprudence like a virus. This simple assertion is the core of this thesis, which integrates three different research projects.

First, the thesis seeks to explain how the Canadian jurisprudence governing workplace drug testing came to be as it is. The interaction between principles of labour law, human rights law and the common and civil law protection of privacy rights could support a range of responses to the question of whether an employer may require workers to submit to drug testing on pain of discipline. Tracing the actual responses to their origins in the United States provides an explanation that a purely doctrinal exposition of the positive law could not. In part, it explains why *this* set of norms applies, rather than any of the other sets of norms that would be equally consistent with the applicable legislation and *ius commune* principles.

Second, the thesis is a reflection on – and an exercise in – research methodology. I start from the premise that many of our explanations of legal phenomena, and in particular of legal change, are grounded in metaphors. But how do metaphors such as transplant and harmonization actually do the work of explaining? I argue that these explanatory metaphors are best understood as performative speech acts and that we should attend more to what they *do* than what they *mean*. What they do is to invite the hearer to make comparisons between the famil-

iar and the unfamiliar. When this process of comparison is systematized, the metaphor becomes a model. Much of the work of this thesis is just such a process of systematization: extending a viral metaphor into an epidemiological model.

Constructing and testing an epidemiological model of legal norm transmission is thus the third aspect of this thesis. I start from the intuition that some legal norms spread virally. After reviewing the literature on social epidemics, I set out those aspects of epidemiological theory that may be profitably transposed to the domain of law. The characterization of each concept of epidemiology and the mapping of that concept onto a legal phenomenon involves choices and each of these choices is defended. I then operationalize the model by applying it to a data set using computer assisted text analysis.

The results strongly support the initial intuitions as refined into testable hypotheses by the model, providing novel insights into exactly how U.S. drug testing norms spread to Canada. Aside from their application to the particular case study, the positive results confirm the utility of both the modelling process in general and the epidemiological model in particular.

Chapter 1 sets out the norm transmission problem in terms of the spread of employment drug testing norms from the U.S. to Canada. The overview and history of the jurisprudence set out in Chapter 1 form the basis of the case study that is used to construct and test the epidemiological model.

In Chapter 2, I discuss the norm transmission problem more generally. I explain how the norm transmission described in Chapter 1 cannot be accounted for by the metaphors of transplant and harmonization. Instead, I propose the metaphor that some legal norms spread virally. This leads me to a discussion on the role of metaphors and of models in legal theory.

Chapters 3 and 4 are devoted to the construction of the epidemiological model of legal norm transmission. In Chapter 3, I provide an introduction to the salient elements of epidemiology and epidemic theory. In Chapter 4, I map those elements onto the legal field.

The application of the model to the case comprises the next two chapters. In Chapter 5, I operationalize the mapping set out in Chapter 4 in order to constitute a data set and interrogate it. Chapter 6 is concerned with testing the hypotheses generated by the model, in particular by measuring the impact of direct contact with American sources and citation to decisions that themselves refer to American sources.

I conclude with the argument that going through the process of model construction gives us insights into the role played by metaphors in legal theory and in interdisciplinary research in particular.



## CHAPTER 1

# RAISING THE PROBLEM: THE TRANSMISSION OF EMPLOYMENT DRUG TESTING NORMS FROM THE UNITED STATES TO CANADA

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## **Introduction**

In this chapter, I set out the problem that leads me to propose an epidemiological model of norm transmission. In its most basic form, the problem can be described as follows: the legal norms governing employment drug testing in Canada clearly have their origins in the United States, but the legislative history shows that the intentional efforts to effect their transmission from the United States to Canada were abandoned.

I begin this chapter by describing the development of drug testing in the United States generally and of the norms governing employment drug testing in particular. I then relate the Canadian government's unsuccessful attempts to import the U.S. drug testing norms and demonstrate how they came into contact with the Canadian jurisprudence despite the failed attempt to transplant them. This leads me to a more detailed description of the so-called "Canadian model" of drug testing, pointing out its similarity to the American regime. In particular, I concentrate on the role of workplace safety in the justification of mandatory employment drug testing. This justification is articulated as a balancing of the privacy interests of individual employees with the general interest in a safe workplace, particularly for those occupying so-called "safety-sensitive" positions. From this description, it will be apparent that: (1) the terminology and justification structure of the American model of drug testing and the Canadian model are too similar for their resemblance to be a simple coincidence, and (2) the Canadian model is rooted in precisely those industries that came into contact with the U.S. drug

testing norms, which leads me to the conclusion that (3) the American norms were transmitted to Canada.

## **1. Development of Drug Testing in the United States**

The advent of employment drug testing in Canada cannot be understood without reference to its prior implementation in the United States. In this section, I provide a brief overview of the history of drug testing in U.S. I then examine the stated reasons for the broad scale implementation of employment drug testing, with particular reference to President Reagan's Executive Order 12564, which mandated drug testing across the federal civil service. This order, and the regulations, policies, and procedures that it engendered, became the template for employment drug testing across the U.S., including in the private sector.

### *1.1. The "Pre-history" of Employment Drug Testing in the U.S.*

The idea of urine examination as a diagnostic tool can be traced back to Hippocrates.<sup>1</sup> However, the earliest drug testing in the U.S. was based on blood and breath. In the 1920s, blood and breath samples were used to identify drunk drivers; with the first "war on drugs" came the first use of biological screening for drugs.<sup>2</sup> It was only in the 1950s that techniques were developed that allowed for large-scale urinalysis screening for drugs. Until the late 1960s, this technique was

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<sup>1</sup> Meryl H. Haber, "Pisse Prophecy: A Brief History of Urinalysis" (1988) 8:3 Clin. Lab. Med. 415, cited in Deborah L. Ackerman, "A History of Drug Testing" in Robert H. Coombs & Louis Jolyon West eds., *Drug Testing: Issues and Options* (New York: Oxford University Press, 1991) 3 at 6. See also John Gilliom, *Surveillance, Privacy, and the Law: Employee Drug Testing and the Politics of Social Control* (Ann Arbor: University of Michigan Press, 1994) at 5.

<sup>2</sup> Ackerman, *ibid.* at 8.

limited to medical uses, for instance in hospital emergency rooms and psychiatric outpatient clinics.<sup>3</sup>

Among the first populations to be subjected to *mass* urinalysis screening was that of veterans returning from the Vietnam war.<sup>4</sup> These tests were implemented due to the concern that many soldiers were returning from Vietnam addicted to opium or heroin. Consequently, morphine (the metabolite excreted in urine subsequent to opiate use) was the only drug for which testing was implemented.<sup>5</sup>

The returning Vietnam veterans programme was eventually extended to the entire military, which was the first state institution to perform testing on all of its members.<sup>6</sup> In early 1982, the U.S. Navy became the first branch of the armed services to put into practice a comprehensive, mandatory, mass-screening pro-

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<sup>3</sup> *Ibid.* at 11.

<sup>4</sup> Olympic athletes became subject to testing at about the same time: the first testing occurred on a preliminary basis at the 1968 Olympics in Mexico City and the first comprehensive testing was done at the 1972 Olympics in Munich. See Eric D. Zemper, “Drug Testing in Athletics” in Coombs & West, *supra* note 1, 113 at 114.

<sup>5</sup> Ackerman, *supra* note 1 at 11.

<sup>6</sup> *Ibid.* at 12. Prisons began testing at about the same time. This is telling, since the military and prisons were identified by Foucault as two “disciplinary” institutions *par excellence*, arguing that they functioned based on a power logic of surveillance. See Michel Foucault, *Surveiller et punir* (Paris: Gallimard, 1975). The other two disciplinary institutions identified by Foucault are the workplace and schools. In the 1980s, at about the same time mass employment testing was instituted, mass testing of highschool students began. In *Vernonia School District v. Acton*, 515 U.S. 646 (1995), the U.S. Supreme Court ruled that mandatory testing for students who participate in extra-curricular activities does not violate their rights under the 4<sup>th</sup> Amendment of the U.S. Constitution.

gramme. Safety was an oft-repeated justification,<sup>7</sup> but the following quote from (then) Rear Admiral Paul Malloy, who initiated the programme, states other reasons:

In decisions with the CNO [Chief of Naval Operations], I recommended that “war” be declared on drugs with all that the phrase clearly implied. I believed that after Vietnam, sailors’ values were confused about things such as right/wrong; legal/illegal; traditional beliefs in God, family and country; and the Navy’s customs and traditions. Historically, all these things promoted pride, high morale, and sound discipline. We believed drug usage in the Navy reflected not only a societal malady but also an erosion of our traditional values...<sup>8</sup>

This concern with “traditional values” was a key stated reason for the “War on Drugs” initiated by President Reagan in the 1980s. It is this mobilization of the rhetoric of values as a reason for employment testing to which we will now turn.

### 1.2. *The “War on Drugs” and the Committee on Organized Crime*

The concern that drug use was both a symptom and a cause of the decline of “traditional values” was an important stated reason guiding U.S. drug policy during the Reagan presidency. On October 2, 1982, Reagan declared “War on

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<sup>7</sup> An aircraft crash that killed 14 people on the carrier U.S.S. *Nimitz* is often cited as the event that triggered the decision for the Navy to implement mass-screening, implying that safety was a primary reason (see e.g. Dennis J. Crouch *et al.*, “A Critical Evaluation of the Utah Power and Light Company’s Substance Abuse Management Program: Absenteeism, Accidents and Costs” in Steven W. Gust, J. Michael Walsh & NIDA eds., *Drugs in the Workplace: Research and Evaluation Data* (Rockville, Md. : [Washington, D.C. : U.S. Dept. of Health and Human Services, Public Health Service, Alcohol, Drug Abuse, and Mental Health Administration, National Institute on Drug Abuse ; Supt. of Docs., U.S. G.P.O., distributor], 1989) 169 at 178. However, according to those who actually made the decision, the decision to test was made several months *before* the crash (Paul J. Mulloy, “Winning the War on Drugs in the Military” in Coombs & West, *supra* note 1, 92 at 93-94).

<sup>8</sup> *Mulloy, ibid.* at 95.

Drugs” in his weekly radio address to the nation.<sup>9</sup> In the address, drug use is characterized as an “epidemic” that has a deleterious effect on families. Reagan cites “stories of families where lying replaces trust, hate replaces love; stories of children stealing from their mothers' purses...”<sup>10</sup>

The War on Drugs was part of a larger anti-crime and “law and order” initiative of the U.S. government under Reagan.<sup>11</sup> In mid-1983, as part of this initiative, Reagan issued an executive order establishing the President’s Commission on Organized Crime.<sup>12</sup> The Commission’s mandate was to make a “full and complete... analysis of organized crime” including “the sources and amounts of organized crime's income.”<sup>13</sup> It was then to report its findings to the President and the Attorney-General and “...make recommendations concerning appropriate

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<sup>9</sup> Reagan, Ronald. “Radio Address to the Nation on Federal Drug Policy, October 2, 1982” in Ronald Reagan Presidential Library, *ed.*, *The Public Papers of President Ronald W. Reagan*, online: <<http://www.reagan.utexas.edu/>> [Reagan, “Radio Address on Federal Drug Policy”]. “War” had actually already been declared almost ten years earlier by then President Richard Nixon. In an address to Congress regarding the establishment of the Drug Enforcement Agency, Nixon stated: “Drug abuse is one of the most vicious and corrosive forces attacking the foundations of American society today. It is a major cause of crime and a merciless destroyer of human lives. We must fight it with all of the resources at our command. This Administration has declared all-out, global war on the drug menace...” “Message to the Congress Transmitting Reorganization Plan 2 of 1973 Establishing the Drug Enforcement Administration, March 28th, 1973” in John T. Woolley & Gerhard Peters, *eds.*, *The American Presidency Project*, online: <<http://www.presidency.ucsb.edu>>.

<sup>10</sup> Reagan, “Radio Address on Federal Drug Policy”, *ibid.* For other examples of Reagan’s citation of the relationship between traditional values (or “family values”) and drug use as a reason for drug policy see “Radio Address to the Nation on Teenage Drug Abuse, January 16, 1988”; “Address Before a Joint Session of Congress on the State of the Union January 25, 1988”; “Remarks Upon Arrival in Palos Hills, Illinois, November 4, 1988” (all in *The Public Papers of President Ronald W. Reagan*, *ibid.*).

<sup>11</sup> On the the relationship between the law and order agenda, the drug war, and employment drug testing, see Gilliom, *supra* note 1 at 31-33.

<sup>12</sup> Executive Order 12435, 48 Fed. Reg. 34723 (August 1, 1983).

<sup>13</sup> *Ibid.* at s. 2 (a).

administrative and legislative improvements and improvements in the administration of justice.”<sup>14</sup>

The Commission came to the conclusion that the primary source of income for organized crime was drug trafficking; its final report was entitled *America's Habit: Drug Abuse, Drug Trafficking, and Organized Crime*.<sup>15</sup> An important finding of the Commission was that, historically, U.S. drug policy had been oriented towards reducing the supply of drugs, notably by attempting to stop their entry into the U.S. and by the domestic repression of drug cultivation, manufacture and distribution. The Commission came to the conclusion that this focus on supply was inefficient and largely ineffective in reducing “the drug problem”.<sup>16</sup> Instead, the Federal government should refocus its efforts on demand reduction.<sup>17</sup>

As part of this demand reduction strategy, the Commission suggested that the workplace was a useful site of intervention. Oddly enough, it is here, in a section that deals with demand reduction in a document that deals with organized crime, and not workplace safety, that we find one of the initial sources of the no-

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<sup>14</sup> *Ibid.*

<sup>15</sup> United States President's Commission on Organized Crime, *America's Habit: Drug Abuse, Drug Trafficking, and Organized Crime: Report to the President and the Attorney General* (Washington, D.C.: Superintendent of Documents, U.S. Government Printing Office, 1986) [*America's Habit*].

<sup>16</sup> *Ibid.* at 429.

<sup>17</sup> *Ibid.*, at 187-88, 204. Interestingly, this is the same position Reagan held, even prior to declaring the “War on Drugs”. Two months into his presidency, at the first press conference in which he was asked whether he intended to have a White House drug strategy, he said: “It is my belief, firm belief, that the answer to the drug problem comes through winning over the users to the point that we take the customers away from the drugs... [I]t's far more effective if you take the customers away than if you try to take the drugs away from those who want to be customers (“The President’s News Conference, March 6, 1981” in *The Public Papers of President Ronald W. Reagan*, *supra* note 9).

tion “safety sensitive position”, as it was later to be articulated. The Commission stated:

Efforts to combat drug abuse can also be successful in the workplace... Drug testing in certain “critical positions,” such as in the transportation industry, law enforcement, and education is particularly important.<sup>18</sup>

In the citation, the use of quotes around “critical positions” is ambiguous, and there are no references in the report that elucidate what this phrase refers to. It is clearly not intended to refer solely to workplace safety, however, given the reference to education workers.<sup>19</sup>

Whatever the intended scope of “critical positions” in the Commission’s report, its recommendations unambiguously advocate employment drug testing as part of the preferred strategy of demand reduction. In the section “Reducing Demand for Drugs”, three recommendations stand out:

3. The President should direct the heads of all Federal agencies to formulate immediately clear policy statements, with implementing guidelines, *including suitable drug testing programs*, expressing the utter unacceptability of drug abuse by Federal employees... Government contracts should not be awarded to companies that fail to implement drug programs, *including suitable drug testing...*

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<sup>18</sup> *America’s Habit*, *supra* note 15 at 461, n. 3.

<sup>19</sup> But see *Ibid.* at 331, n. 3 (referring to abuse of cocaine by “individuals with whom we trust our health, welfare, and safety” including “physicians, airline pilots, nuclear plant operators, military personnel, railroad switchmen, school bus drivers, prison guards, and police officers”).

7. Every employer, public and private, and public education institutions of all levels should have clearly-stated policies prohibiting drug use, possession of drugs, or being under the influence of drugs on their premises. The consequences of violating these prohibitions should be clearly explained.

8. *Government and private sector employer who do not already require drug testing of job applicants and current employees should consider the appropriateness of such a testing program.*<sup>20</sup>

The Commission's report is not at all clear on exactly *how* drug testing is supposed to reduce demand for drugs, other than as part of a general policy of intolerance towards drug use. Perhaps they believed that the relationship was so obvious that it need not be stated. One commentator on drug testing describes it as follows:

Testing threatens millions of Americans with the speedy, inexpensive infliction of a sanction – unemployment – that has far more sting than the criminal penalties usually imposed for casual drug use. As a deterrent, employment testing can be extremely effective, regardless of its relation to on-the-job performance.<sup>21</sup>

### 1.3. *The Beginnings of a Safety Discourse*

During the three years that the President's Commission was doing its work, employment drug testing had begun to appear in American industry, both private and public. By 1985, at least some major corporations were conducting pre-

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<sup>20</sup> *Ibid.* at 483-5 [emphasis added].

<sup>21</sup> Stephen J. Schulhofer, "On the Fourth Amendment Rights of the Law-Abiding Public" (1989) Sup. Ct. Rev. 87 at 129, cited in Gilliom, *supra* note 1 at 33.



employment screening “with the stated motive of promoting occupational safety.”<sup>22</sup>

During the same period, the exact phrase “safety-sensitive positions” made its first appearance. In July of 1983, the U.S. Department of Transport Federal Railroad Administration (the “FRA”) issued a notice setting out its intention to adopt regulations pertaining to alcohol and drugs in the railroad industry.<sup>23</sup> In August of 1985, after a series of consultations with industry and employee representatives, the FRA promulgated a new set of regulations entitled *Control of Alcohol and Drug Use in Railroad Operations*.<sup>24</sup> The reasons for adopting the regulations were that, in the view of the FRA, “alcohol and drug use result in safety risks and consequences that are unacceptable.”<sup>25</sup> Consequently, the FRA announced that “[t]he time has come for the issuance of a clear Federal prohibition on the job-related use or possession of alcohol and other drugs by employees engaged in safety-sensitive functions.”<sup>26</sup>

The *Railroad Regulations* operate on the principle that authority for mandatory drug testing is based on “reasonable cause to question the fitness of an

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<sup>22</sup> Jacques Normand, Richard O. Lempert, & Charles P. O'Brien, *Under the Influence? Drugs and the American Work Force* (Washington, D.C.: National Academy Press, 1994) at 175. See also J. Michael Walsh & Jeanne G. Trumble, “The Politics of Drug Testing” in Coombs & West, *supra* note 1, 22 at 30-31.

<sup>23</sup> 48 Fed. Reg. 30723 (July 5, 1983).

<sup>24</sup> 50 Fed. Reg. 31508 (August 2, 1985) [*Railroad Regulations*].

<sup>25</sup> *Ibid.* at 31515.

<sup>26</sup> *Ibid.* at 31534.

employee engaged in a safety-sensitive function.”<sup>27</sup> Reasonable cause, within the meaning of the regulations, comprises not only reasonable suspicion that the employee is in fact impaired, but the occurrence of an accident whether other evidence of employee impairment is present or not.<sup>28</sup> The regulations also provide for the mandatory pre-employment screen of all retained job applicants destined to be engaged in safety-sensitive functions.<sup>29</sup> In 1988, the *Railroad Regulations* were amended to provide for random testing of all persons occupying safety-sensitive positions.<sup>30</sup>

Though the phrases “safety-sensitive position” and “safety-sensitive function” occur repeatedly in the voluminous material preceding the actual provisions of the regulations, they do not appear in the regulations themselves. Thus, in order to define “safety-sensitive”, one must look to the population of employees covered by the regulations (which, recall, are predicated on the idea that they only apply to those occupying such positions or engaged in such functions). This is found in the regulations’ definition of “covered employee”, which refers to employees “subject to the *Hours of Service Act*.”<sup>31</sup> The *Hours of Service Act*, as it read at the time the regulations were adopted, defined such employees as individuals “en-

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<sup>27</sup> *Ibid.* at 31552.

<sup>28</sup> Provided for at 49 CFR § 219.301 (referenced in the *Railroad Regulations*, *ibid.* at 31573).

<sup>29</sup> 49 C.F.R. § 219.501 (referenced in the *Railroad Regulations*, *ibid.* at 31577).

<sup>30</sup> *Random Drug Testing; Amendments to Alcohol/Drug Regulations*, 53 Fed. Reg. 47102 (November 21, 1988).

<sup>31</sup> 49 C.F.R. § 219.5(d) (referenced in the *Railroad Regulations*, *supra* note 24 at 31569).

gaged in or connected with the movement of any train, including hostlers.”<sup>32</sup>

Thus, “safety-sensitive” as it was first used cast a very wide net indeed.

It is perhaps unsurprising that the first large-scale civilian employment drug testing regime should appear in the railroad industry, as the railroads have a long history of regulating drug and alcohol consumption by their employees. In the 19<sup>th</sup> century, the railroads adopted “Rule G”<sup>33</sup> – which provided for immediate discharge of engineers, firemen and brakemen found to be drunk on duty or subject to duty – in response to prevalent and persistent drunkenness among employees.<sup>34</sup> A version of Rule G (still so-called) was enforced by the railroads prior to the adoption of the *Railroad Regulations* and indeed was relied upon by some railroads to justify drug testing as early as 1984.<sup>35</sup>

After the FRA passed the *Railroad Regulations*, other Department of Transport agencies followed, including the Federal Aviation Administration, the Federal Highway Administration, the Coast Guard, and the Urban Mass Transportation Administration. These regulations all include the notion of “safety-sensitive position” and they all provide for mandatory pre-employment testing, testing on a pe-

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<sup>32</sup> 45 U.S.C. § 61 (3)(2). A “hostler” is someone who moves locomotives while in a yard but not on the main line.

<sup>33</sup> So-called because it was the seventh item in an alphabetical list of rules.

<sup>34</sup> Rudolph Daniels, *Trains across the Continent: North American Railroad History*, 2<sup>nd</sup> ed. (Bloomington, IN: Indiana University Press, 2001) at 71. See also Ramon F. Adams, *The Language of the Railroader* (Norman: University of Oklahoma Press, 1977) *s.v.* “Rule G” (describing Rule G as “...a club used by the railroad companies to make railroads safer”). A mythologized version of the story behind Rule G’s adoption is told in the silent film *Rule G* (USA: Blazon Film Producing Company, 1915). For the Canadian version of Rule G, see note 91 *infra*.

<sup>35</sup> Marion Crain, “Expanded Employee Drug-Detection Programs and the Public Good: Big Brother at the Bargaining Table” (1989) 64 N.Y.U.L. Rev. 1286 at 1315, n. 177.

riodic basis, on reasonable suspicion, after a serious accident, and randomly.<sup>36</sup>

These regulations were eventually entrenched by legislation in 1991.<sup>37</sup>

#### 1.4. *Executive Order 12564*

Soon after the Commission on Organized Crime tabled its report in March of 1986, Ronald and Nancy<sup>38</sup> Reagan addressed the nation on live television to announce a “national crusade against drug abuse”.<sup>39</sup> In the address, the President reiterated the relationship between traditional values and drug use, stating that “[d]rugs are menacing our society. They're threatening our values and undercutting our institutions. They're killing our children.” Evoking the United States as the land of freedom and a safe haven for those who escaped starvation, disease and persecution, Reagan said: “What an insult it will be to what we are and whence we came if we do not rise up together in defiance against this cancer of drugs.”

This television address was the first occasion on which Reagan made reference to a relationship between drug use and accidents, saying that “everyone's safety is at stake when drugs and excessive alcohol are used by people on the highways or by those transporting our citizens or operating industrial

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<sup>36</sup> G. John Tysse & Garen E. Dodge, *Winning the War on Drugs: The Role of Workplace Testing* (Washington, D.C.: National Foundation for the Study of Employment Policy, 1989).

<sup>37</sup> By the *Omnibus Transportation Employee Testing Act of 1991*, Pub. L. No. 102-143, 105 Stat. 953.

<sup>38</sup> On Nancy Reagan's role on the drug war, see Gilliom, *supra* note 1 at 29-30 (arguing that Nancy Reagan was advised by White House staff to adopt “the drug problem” as an issue in order to bolster her waning popularity, resulting in the “Just say no” campaign).

<sup>39</sup> “Address to the Nation on the Campaign Against Drug Abuse, September 14, 1986” in *The Public Papers of President Ronald W. Reagan*, *supra* note 9.

equipment.”<sup>40</sup> The next day, Reagan signed Executive Order 12564 – Drug-Free Federal Workplace,<sup>41</sup> thereby subjecting over a million federal employees to random urinalysis drug testing.<sup>42</sup>

The theme of drugs being responsible for social breakdown can be seen in the preamble of Executive Order 12564, where it is stated that “[t]he profits from illegal drugs provide the single greatest source of income for organized crime, fuel violent street crime, and otherwise contribute to the breakdown of our society”. However, the relationship to workplace safety also makes an appearance, with the statement that “[t]he use of illegal drugs, on or off duty, by Federal employees... can pose a serious health and safety threat to members of the public and to other Federal employees.” The remainder of the Order is premised on the position that “[p]ersons who use illegal drugs are not suitable for Federal employment.”<sup>43</sup> It mandates the head of each executive agency to develop a programme to eradicate drugs from the workplace, including through the use of drug testing.<sup>44</sup>

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<sup>40</sup> This was to become an increasingly explicit theme. See *e.g.* “Remarks at a Seminar on Substance Abuse in the Workplace in Durham, North Carolina, February 8, 1988” and “Remarks at the National Conference on Corporate Initiatives for a Drug Free Workplace, June 9, 1988” (both in *The Public Papers of President Ronald W. Reagan*, *supra* note 9).

<sup>41</sup> 51 F.R. 32889, 3 C.F.R., 1986 Comp. 224.

<sup>42</sup> The figure cited in Gilliom, *supra* note 1 at 30 is 1.2 million. In Robert M. Tobias, “You’re in Government? Urine Trouble” in Bureau of National Affairs, *ed.*, *Employee Testing* (Washington, D.C.: Bureau of National Affairs, 1988) IV-93, the figure cited is 1.1 million.

<sup>43</sup> Executive Order 12564, *supra* note 41, s. 1 (c).

<sup>44</sup> *Ibid.*, s. 2.

In addition to authorizing mandatory screening for applicants to the Federal civil service,<sup>45</sup> the order authorizes mandatory testing where: (1) there is a reasonable suspicion that an employee uses illegal drugs, (2) it is conducted in the course of an investigation into an “accident or unsafe practice”, or (3) it is part of a counselling or rehabilitation programme related to employment (*i.e.* an Employee Assistance Programme).<sup>46</sup>

Whereas in the above cases the agency head is *authorized* to implement testing, there is one section of the Order that *requires* a testing programme. Section 3(a) of the Order states:

(a) The head of each Executive agency shall establish a program to test for the use of illegal drugs by employees in sensitive positions...

After the appearance of “critical positions” in the Report of the President’s Commission on Organized Crime, we now see “sensitive positions” in the Executive Order that implements the Commission’s recommendations. There appears, however, only to be a loose connection to the notion of “safety-sensitive position” adopted by the Federal Railroad Administration. The definition of “sensitive positions” is found in Section 7 (d) of the Order, which states:

(d) For purposes of this Order, the term "employee in a sensitive position" refers to:

(1) An employee in a position that an agency head designates Special Sensitive, Critical-Sensitive, or Noncritical-Sensitive under Chap-

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<sup>45</sup> *Ibid.*, s. 3 (d).

<sup>46</sup> *Ibid.*, s. 3 (c).

ter 731 of the Federal Personnel Manual or an employee in a position that an agency head designates as sensitive in accordance with Executive Order 10450, as amended;

(2) An employee who has been granted access to classified information or may be granted access to classified information pursuant to a determination of trustworthiness by an agency head under Section 4 of Executive Order 12356;

(3) Individuals serving under Presidential appointments;

(4) Law enforcement officers as defined in 5 U.S.C. 8331(20); and

(5) Other positions that the agency head determines involve law enforcement, national security, the protection of life and property, public health or safety, or other functions requiring a high degree of trust and confidence.

The notion of “sensitive” deployed here is broad; vast even. Positions are sensitive if they have the potential for “inestimable”, “exceptionally grave”, “serious”, or “moderate” adverse impact on the efficiency of the agency or service.<sup>47</sup> Positions are sensitive if their occupants could bring about “... a material adverse effect on the national security”.<sup>48</sup> Positions held under Presidential appointment, in law enforcement or that require access to classified documents are also sensitive. Note

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<sup>47</sup> These are the definitions of “Special-Sensitive”, “Critical-Sensitive”, and “Non-Critical Sensitive” that appear in Chapter 731 of the Federal Personnel Manual, referred to in s. 7(d)(1). See United States Civil Service Commission & United States Office of Personnel Management, *Federal Personnel Manual* (Washington: Office of Personnel Management [Supt. of Docs., U.S. G.P.O], 1956) at 731-7 and 731-8.

<sup>48</sup> This is the definition of “sensitive position” found at s. 4 (b) of Executive Order 10450 of Apr. 27, 1953, 18 F.R. 2489, 3 C.F.R., 1949-1953 Comp. 936, which is referred to in s. 7(d)(1) of Executive Order 12564 *supra* note 41. Drug use was already prohibited for occupants of these positions, along with “...criminal, infamous, dishonest, immoral, or notoriously disgraceful conduct, ...[or] sexual perversion (s. 8(a)(1)(iii) of Executive Order 10450). For the implementation guidelines of Executive Order 10450, see Chapter 732 of the *Federal Personnel Manual*, *ibid.*.”

that s. 7(d)(5) appears to be a catch-all category that covers positions that might have been missed by the previous four subsections. The order does reference safety, though it is not in terms of *workplace safety*, but rather *public* safety.

The adoption of workplace safety as a primary justification for generalized drug testing is clear in the administrative guidelines that implemented Executive Order 12564.

### 1.5. *Federal Personnel Manual Letter 792-16*

A little over two months after President Reagan signed Executive Order 12564, the U.S. Office of Personnel Management circulated *Federal Personnel Manual Letter 792-16*,<sup>49</sup> as directed by the President.<sup>50</sup> Such letters are supplements to be added to the loose leaf *Federal Personnel Manual* (“FPM”), which is a series of guidelines that are in the nature of employer policies, rather than the result of a delegated

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<sup>49</sup> *Federal Personnel Manual Letter 792-16* (issued by the Office of Personnel Management, November 28, 1986) reprinted in Craig M. Cornish, *Drugs and Alcohol in the Workplace: Testing and Privacy* (Wilmette, Ill.: Callaghan, 1988) at 272 [*FPM Letter 792-16*]. Note that there is no citation to an official publication, as this letter was not officially published (see *infra* note 51).

<sup>50</sup> Executive Order 12564, *supra* note 41, stipulates at s. 6(a)(1) that the Office of Personnel Management (the successor agency to the U.S. Civil Service Commission) shall “[i]ssue government-wide guidance to agencies on the implementation of the terms of this Order.”



power of regulation.<sup>51</sup> The Office of Personnel Management describes such letters as follows:

FPM Letters generally are advisory guidance for supervisors and personnel specialists to use as management tools and ordinarily would not be published under formal rulemaking procedures.<sup>52</sup>

In the introduction to *FPM Letter 792-16*, which – it should be noted – purports to interpret and implement, but not add to, Executive Order 12564, the justification for drug testing contains the following passage:

Employees who use illegal drugs have three to four times more accidents while at work. Federal workers have the right to a safe and secure workplace, and all American citizens, who daily depend on the work of the Federal government for their health, safety and security, have the right to a reliable and productive civil service. Federal agencies must take action for the protection of individual drug users, their co-workers, and the society at large. In recognition of this, President Reagan, in Executive Order 12564, set forth the

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<sup>51</sup> This was not lost on unions who contested *FPM Letter 792-16* on the grounds that it did not meet the notice and comment requirements of the Federal *Administrative Procedure Act*, 5 U.S.C. § 553. In *National Treasury Employees Union v. Reagan* 685 F. Supp. 1346 at 1355 (E.D. La. 1988), the U.S. District Court found that “FPM Letter 792-16... guides agencies on implementation of the Executive Order and is a binding legislative rule. The *Federal Personnel Manual Letter* was not issued in accordance with the *Administrative Procedure Act* and is invalid.” When the union sought to have the implementation of *FPM Letter 792-16* halted until the notice and comment requirements had been met, the Court (per Collins, J.) refused, citing that “...due to the strong interests promoted by drug testing of sensitive public employees... it would be unnecessarily disruptive to enjoin implementation of the plans while the agencies comply with the APA procedures” 1988 U.S. Dist. LEXIS 11556; Civil Action No. 86-4058 (E.D. La. Oct 13, 1988) at 2. Instead, the Court simply ordered the Office of Personnel Management to notify the plaintiff union and accept its comments.

<sup>52</sup> *Federal Personnel Manual Letter 792-19*, (1989) 54 F.R. 47324-01.

policy of the United States Government to eliminate drug use from the Federal workplace.<sup>53</sup>

Here we can clearly see how the initial stated reasons for the implementation of mass drug testing in the Federal civil service gave way to a different justification.

### 1.6. *From Moral Crusade to “Safety-Sensitive Positions”*

In the initial programme in the military, the report of the Commission on Organized Crime, and Reagan’s public statements on the drug war, values were an organizing principle. Drugs were an “epidemic” or “societal malady” that ravaged “families” by “eroding traditional values” and sustaining organized crime. Drug testing was proposed as one way to combat the “drug problem” as a component of a general demand reduction strategy implemented in a particularly effective site of regulation – the workplace. In so far as safety was an issue, it was primarily limited to the transportation sector.

Executive Order 12564 symbolically marks the shift from a relatively localized phenomenon concerned primarily with public safety in particular sectors, to a massively generalized norm applicable to vast swaths of the population.<sup>54</sup> On the other hand, the context of its adoption and later interpretation demonstrate the

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<sup>53</sup> *FPM Letter 792-16*, *supra* note 49, s. 1(b). The figure of “three to four times more accidents while at work” has been traced to a “study” allegedly done at Firestone Tire and Rubber Company in 1973. Researchers have conclusively demonstrated that this “study” was in fact never done, and that the figure was simply made up. For the story behind this fictional data and its use by the U.S. government, see John P. Morgan, “The ‘Scientific’ Justification for Urine Drug Testing” (1988) 36 U. Kan. L. Rev. 683 at 683-85; American Civil Liberties Union, *Drug Testing: A Bad Investment* by Loren Siegel (New York: ACLU Department of Public Education, 1999). See also Gilliom, *supra* note 1, at 40-43.

<sup>54</sup> Note that on the same day Reagan signed Executive Order 12564 he transmitted to Congress a draft bill, the *Drug-Free America Act*. It would evolve into the *Drug Free Workplace Act*, 41 U.S.C. 701 (1988), which requires those contracting with the Federal government to adopt a series of anti-drug measures targeting their employees.

complex interplay between the rhetoric of morality and values, mobilized as a reason for introducing testing and safety, which justifies it.<sup>55</sup> In the order, the theme of morality coexists with a certain number of references to safety, though generally in the context of public safety rather than occupational safety. With *FPM Letter 792-16*, safety (along with productivity) becomes a central justification for drug testing.

I do not mean to say that safety was simply an afterthought cynically mobilized for propaganda purposes. Clearly, the relationship between drug use and safety was a primary concern in the formulation of the *Railroad Regulations*, though a surprisingly candid representative of the Department of Transportation would later admit that "... we do not have any hard data to show that there is a safety problem with respect to drugs."<sup>56</sup> The same relationship was considered, albeit peripherally, by the President's Commission on Organized Crime.<sup>57</sup> What I do

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<sup>55</sup> On drug testing as an exercise in symbolism, see Steven Wisotsky, "The Ideology of Drug Testing" (1987) 11 *Nova L. Rev.* 763.

<sup>56</sup> The comment was made by Mr. Neil Eisner, Assistant General Counsel for the U.S. Department of Transportation in his testimony before the Canadian House of Commons Standing Committee on Transportation, see *infra* note 77.

<sup>57</sup> *America's Habit*, *supra* note 15 at 331, n. 3.

want to claim is that the discourse of values was a condition of possibility<sup>58</sup> for a discourse of safety.

During the early period of the “drug war”, there was a significant and sustained production of knowledge around drugs that was organized around the concept of the *harm* that drugs cause. Starting from the principle that drugs are both a cause of and a consequence of a general corruption of society, researchers sought to discover, catalogue and organize understanding of the particular harms that drugs cause.<sup>59</sup> Workplace accidents were one of the harms that became a possible object of study once the moral discourse had posed these parameters.

The strength and pervasiveness of the category of “harm” is attested to by the fact that it organized debate around drug policy across the spectrum. Those who argued against prohibition as a method of regulating “the drug problem”

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<sup>58</sup> Other conditions include the technology to test (for without testing, the production of knowledge about use is severely limited), which was predicated on the existence of a drug testing industry with economic incentives to develop not only the “solution” of drug testing, but the “problem” of drugs in the workplace. On these factors, see Lynn Zimmer & James B. Jacobs, “The Business of Drug Testing: Technological Innovation and Social Control” (1992) 19 *Contemp. Drug Probs.* 1; Kenneth D. Tunnell, K. D., *Pissing on Demand: Workplace Drug Testing and the Rise of the Detox Industry* (New York: NYU Press, 2004). This nexus between technology, knowledge, economic incentives and institutional goals offers the possibility of theorizing drug testing in terms of what Michel Foucault called a *dispositif* (“dispositive”). On dispositive analysis, see Laurence Olivier, “La question du pouvoir chez Foucault: espace, stratégie et dispositif” (1988) 21(1) *Canadian Journal of Political Science / Revue canadienne de science politique* 83, *esp.* at 92-93; See also Girotto Agamben, *Qu'est-ce qu'un dispositif?* (Paris: Rivages, 2007).

<sup>59</sup> A parallel can be seen with the temperance movement of the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. The conception of alcohol as a moral disorder (both of individuals and of society generally) led to a significant production of knowledge around the mechanisms by which it caused harm. For examples of this research, see *e.g.* William Hargreaves, *Alcohol and Science, or, Alcohol: What it is and What it Does* (New York: National Temperance Society and Publication House, 1882); Alonzo B. Palmer & Mary A.R. Livermore, *The Temperance Teachings of Science: Adapted to the use of teachers and pupils in the public schools* (Boston: D. C. Heath, 1886). For a discussion on the similarities between the Canadian temperance movement and the drug war in the 1980s, see Anton R.F. Schweighofer, “The Canadian Temperance Movement: Contemporary Parallels” (1988) 3 *C.J.L.S.* 175. On the role of social research in policy formation in Canada, see Patricia G. Erickson, “Neglected and Rejected: A Case Study of the Impact of Social Research on Canadian Drug Policy” (1998) 23:2-3 *Can. J. Sociology* 263.

called for its redefinition in terms of “a public health” issue rather than a moral one. The common appellation of this position is a “harm reduction strategy”.<sup>60</sup>

This production of knowledge about drug harms was (and remains) an explicit policy of the U.S. government. It was largely accomplished through the National Institute on Drug Abuse (“NIDA”), which was established in 1972 as a branch of the U.S. Health Department.<sup>61</sup> Workplace drug use became a subject of interest for the NIDA in the 1980s:

...[NIDA] played an important role in shaping employers’ beliefs regarding both these issues [that employee drug use was a problem and that drug testing offered a solution]. Throughout the 1980s NIDA provided funding to researchers studying the workplace drug problem, and by 1990 it had sponsored four national conferences on the topic. Even before President Reagan ordered the testing of federal workers, NIDA had funded the development of new drug-testing technologies and had urged public and private employers to adopt testing programs.<sup>62</sup>

Former NIDA scientists have said that it was made clear to funding applicants that only research into harms, and not benefits, of drugs would receive grants.<sup>63</sup>

This research programme produced a certain number of “truths” about the relationship between drug use and safety. It also allowed safety to become a central justification for drug testing. If drug use causes accidents, then eliminating

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<sup>60</sup> See *e.g.* the anti-prohibition U.S. Drug Policy Alliance, online: < <http://www.drugpolicy.org> >.

<sup>61</sup> Helen Pearson, “Science and the War on Drugs: A Hard Habit to Break” (2004) 430 *Nature* 394 at 394.

<sup>62</sup> Zimmer & Jacobs, *supra* note 58 at 16 [references omitted].

<sup>63</sup> Pearson, *supra* note 61 at 395. This comment was regarding drug research generally, and not the question of drugs in the workplace *per se*.

drug users from positions in which accidents can have catastrophic consequences appears justified. This is the central position that came to structure the disparate notions of “critical positions”, “sensitive positions” and “safety-sensitive positions”.

That drug testing is a method to promote safety – in particular by reducing the risk of accidents that cause harm to the public or to workers – became the gold standard of justifications. Defence of drug testing on these grounds was invariably accompanied by claims that “scientific” studies demonstrate a causal relationship between drug testing and reduced accident rates. The following passage from *Winning the War on Drugs: The Role of Workplace Testing* is typical:

[T]he overwhelming evidence establishes that workplace drug testing, as part of an anti-drug abuse program, does in fact deter illegal drug use both on and off the job. Drug testing has been shown to be effective in preventing the negative consequences of workplace drug abuse, including those situations where drug-induced impairment threatens the life of the employee, fellow workers, or the public at large.<sup>64</sup>

In fact, there was very little peer-reviewed research clearly relating drug testing to accidents. What little research there was in the early 1980s was either so method-

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<sup>64</sup> *Supra* note 36 at 14.

ologically unsound as to be totally useless, or inconclusive.<sup>65</sup> But the scientific validity of claims relating drug testing to accidents was to become a somewhat moot point. For the reasoning that drug use causes accidents and that therefore drug tests will prevent them became *legally* true when the U.S. Supreme Court cited safety as the principal justification for allowing mass drug testing in employment.

### 1.7. *The Triumph of Safety at the United States Supreme Court*

The safety justification was finally endorsed by the U.S. Supreme Court in *Skinner v. Railway Labor Executives Association*.<sup>66</sup> It was in this case that the Court upheld the Federal Railroad Administration regulations requiring testing of those in safety-sensitive positions. The Court found that urine tests constitute searches within the meaning of the 4<sup>th</sup> Amendment of the Constitution.<sup>67</sup> Relying upon the “special needs doctrine”, which allows searches without a warrant even in the absence of individualized suspicion, the Court proceeded to balance the government interest

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<sup>65</sup> See Crouch, *supra* note 7; Morgan, *supra* note 53. More recent research has found a very weak correlation or none at all. See, e.g. Jacques Normand, S. D. Salyards & John. J. Mahoney. “An Evaluation of Preemployment Drug Testing” (1990) 75:6 J. Applied Psych. 629 at 635 (finding that “no statistically significant relationship was detected between drug-test results and number of injuries”); Rebecca S. Spicer, Ted R. Millter & Gordon S. Smith. “Worker Substance Use, Workplace Problems and the Risk of Occupational Injury: A Matched Case-Control Study” (2003) 64 J. Stud. Alcohol 570 at 575 (finding that there appeared to be a correlation but that “[b]oth substance users and risk-takers were more likely to be injured. However only risk taking was a significant predictor of injury when substance use was controlled for.”). See also Cheryl J. Cherpitel, “Substance Use, Injury, and Risk-Taking Disposition in the General Population” (1999) 23:1 Alcoholism: Clin. & Exp. Research 121 (finding that risk-taking and impulsivity are better indicators of injury than substance use).

<sup>66</sup> 489 U.S. 602 (1989) [*Skinner*].

<sup>67</sup> *Ibid.* at 617.

in testing against the privacy interest of employees. Justice Kennedy, for the majority, concluded that:

The Government interest in testing without a showing of individualized suspicion is compelling. Employees subject to the tests discharge duties fraught with such risks of injury to others that even a momentary lapse of attention can have disastrous consequences.<sup>68</sup>

Shortly thereafter, the Court rendered its decision in *National Treasury Employees Union et al. v. Von Raab*,<sup>69</sup> in which it confirmed the constitutionality of mandatory testing for customs agents. The Court found that the tests were justified because the “Customs Service is our Nation's first line of defense against one of the greatest problems affecting the health and welfare of our population,”<sup>70</sup> and because customs agents carry firearms, which raise significant safety concerns.<sup>71</sup>

It was this reasoning, linking drug testing to safety, that guided the adoption of drug testing programmes in Canada subsequent to the U.S. experience. As we shall see in the following section, the Canadian model is in fact a direct descendent of the legal framework governing drug testing in the U.S.

## **2. The Canadian Model**

The designation of the generally accepted legal principles governing drug testing in Canada as the Canadian model is recent. This “model” is portrayed as the

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<sup>68</sup> *Ibid.* at 628.

<sup>69</sup> 489 U.S. 656 (1989) [*Von Raab*].

<sup>70</sup> *Ibid.* at 668.

<sup>71</sup> *Ibid.* at 670, 672.



natural consequence of jurisprudential accumulation resulting in the crystallization of a stable set of rules according to an inherent logic. In this section, I will argue that this origin story is misleading, if not outright false. Instead, I claim that the Canadian jurisprudence is, and was from the very beginning, a derivative of the U.S. model.

### *2.1. Description of the Model*

The existence of the Canadian model, and its characterization, was recently described in a lengthy arbitration decision by arbitrator M. G. Picher. Picher describes the “development” of the model as follows:

[98] It is fair to say that over time the arbitral jurisprudence in Canada has developed relatively clear lines as to what constitutes an acceptable drug and alcohol testing policy in a safety sensitive workplace which is governed by a collective bargaining regime...

[99] The... jurisprudence has come to be viewed as tantamount to a Canadian code for drug testing in a safety sensitive workplace governed by collective bargaining, the regime by which terms and conditions of employment must be negotiated between employers and unions. They have become widely accepted and applied. Indeed, the drug testing policies and limitations fashioned within that jurisprudence came to be recognized as the Canadian model as adopted in the construction industry in Alberta.

[100] At the risk of oversimplification, the Canadian model for alcohol or drug testing in a safety sensitive workplace as developed in the arbitral jurisprudence generally contains a number of elements as summarized below:

- No employee can be subjected to random, unannounced alcohol or drug testing, save as part of an agreed rehabilitative program.
- An employer may require alcohol or drug testing of an individual where the facts give the employer reasonable cause to do so.
- It is within the prerogatives of management's rights under a collective agreement to also require alcohol or drug testing following a significant incident, accident or near miss, where it may be important to identify the root cause of what occurred.
- Drug and alcohol testing is a legitimate part of continuing contracts of employment for individuals found to have a problem of alcohol or drug use... This is the only exceptional circumstance in which the otherwise protected employee interest in privacy and dignity of the person must yield to the interests of safety and rehabilitation, to allow for random and unannounced alcohol or drug testing.
- The cases generally recognize that an employee's refusal or failure to undergo an alcohol or drug test in the three circumstances described above may properly be viewed as a serious violation of the employer's drug and alcohol policy, and may itself be grounds for serious discipline.<sup>72</sup>

Though this description of the model is accurate, it obscures its provenance by characterizing it as a simple jurisprudential evolution. In fact, the model can be traced to the U.S., and it is not so much a development of Canadian law as it is a set of norms that were transmitted and subsequently ratified by the jurisprudence. I have identified two primary points of contact. First, the various transportation

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<sup>72</sup> *Re Imperial Oil and C.E.P. Local 900*, (2006) 157 L.A.C. (4th) 225, 88 C.L.A.S. 273 (Quicklaw), (M.G. Picher) (Ont. Labour Arbitration) [*Imperial Oil* cited to C.L.A.S.] [references omitted].

guidelines adopted by the U.S. Department of Transportation began to filter through to the Canadian transportation industry, from whence they spread to other industries. Second, U.S.-based companies with Canadian operations applied their drug testing policies to their Canadian employees.

## 2.2. *Transmission to Canada*

Drug testing was well underway in the U.S. before it became a major issue in Canada. Despite then Prime Minister Mulroney's announcement – the day after Reagan signed Executive Order 12564 – that Canada was afflicted with a “drug epidemic”,<sup>73</sup> employment drug testing was not the immediate response. “On the whole, the Canadian business community and professional groups were reluctant to follow the American lead on the testing issue.”<sup>74</sup> One notable exception was the transportation industry, to which we now turn.

### 2.2.1. *Norms on Rails: Drug Testing and the Canadian Railroad Industry*

The transportation industry generally and the railroad industry in particular played a pivotal role in the transmission of the U.S. drug testing norms to Canada. Two aspects of this role are of particular interest for my purposes. First, the norms were transmitted despite the failure of an attempt by Canadian legislators

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<sup>73</sup> Eric L. Jensen & Jurg Gerber. “State Efforts to Construct a Social Problem: The 1986 War on Drugs in Canada” (1993) 18:4 *Can. J. Sociology* 453 at 454. See also Lennart E. Henriksson, “The Unconvincing Case for Drug Testing” (1991) XVII:2 *Canadian Public Policy - Analyse de Politiques* 183 at 185. Henriksson reports that Mulroney later claimed the timing was purely coincidental.

<sup>74</sup> Henriksson, *ibid.* at 184. See also Government of Canada, *National Drug Strategy: Action on Drug Abuse* (Ottawa: Queen's Printer, 1987) (drug-testing not part of the national drug strategy) and Canada (House of Commons Standing Committee on National Health and Welfare), *Booze, Pills & Dope: Reducing Substance Abuse in Canada: Report of the Standing Committee*, by Bruce Halliday (Ottawa: Queen's Printer, 1987) (conceding that reasonable cause testing may be desirable in some circumstances, but that random testing was to be proscribed).

to transplant them. Second, the caselaw generated by the railway industry appears to be a crucial point of contact that allowed the norms to spread across the Canadian jurisprudence.

2.2.1.1. *The Rejected Transplant: Canada's Failure to Legislate*

In 1987, then Canadian Minister of Transportation, John Crosbie struck the Task Force on the Control of Drug and Alcohol Abuse in the Railway Industry. The Task Force was struck following the 1986 head-on collision between a CN freight train and a VIA rail passenger train near Hinton, Alberta, despite the fact that the Commission of Inquiry into that accident found that none of the employees involved were impaired by alcohol or drugs.<sup>75</sup> The Task Force collected data on the prevalence of drug and alcohol use among personnel occupying “positions critical to railway safety”<sup>76</sup> and recommended to the House of Commons Standing Committee on Transport that drug testing be implemented; the Committee agreed, referring the matter to Transport Canada.<sup>77</sup>

At the same time, Canada was under considerable pressure to bring its legislation into line with the drug testing regime in the U.S. transportation sector:

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<sup>75</sup> Canada, Commission of Inquiry, Hinton Train Collision. *Report of the Commissioner*, by the Honorable Mr. Justice Rene P. Foisy. (Ottawa: Minister of Supply and Services, 1986).

<sup>76</sup> Canada, Task Force on the Control of Drug and Alcohol Abuse in the Railway Industry, *Final Report: Survey of Persons Employed in Positions Critical to Railway Safety* (Ottawa: Task Force on the Control of Drug and Alcohol Abuse in the Railway Industry, 1987) [*Task Force Report*]. Health Canada, which was part of the Task Force, issued a separate report: Canada (Minister of National Health and Welfare) & Niagara Institute, *Report of the National Consultation on Substance Abuse and the Workplace* (Ottawa: Ministry of Supply and Services Canada [cat. H21-101/1988], 1988).

<sup>77</sup> Transport Canada, *Information: Report on Mandatory Testing of Rail Works Made Public* (Ottawa: Transport Canada, 1988), cited in Lynne M. McNally, *A Study of the Development, Evolution, and Demise of Transport Canada's Strategy on Substance Use in Safety-Sensitive Positions in Canadian Transportation* (M.A. Thesis, Simon Fraser University School of Criminology, 1995) at 35.

The stated intent of the American Department of Transportation was to apply its drug testing requirements to foreign companies domiciled outside the United States. This was to go further than subjecting Canadian employees to testing on U.S. soil while engaged in cross-border transport. Rather, Canadian companies who wished to engage in cross-border transport would have to subject their employees to testing *in Canada* that conformed to the U.S. rules in order for those employees to be allowed into the United States. Canada was given a temporary exemption in order to make the legislative and regulatory changes deemed necessary to comply.<sup>78</sup>

Transport Canada began to formulate policy on drug testing. In the meantime, the adoption of the 1988 *Railway Safety Act* provided an opportunity to put in place the legislative framework for such policy. Section 18 of this statute introduces the notion of “positions critical to safe railway operations” and provides that Cabinet may make regulations governing the “control of the use of... drugs” by those persons. The relevant subsections are reproduced below.<sup>79</sup>

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<sup>78</sup> The initial deadline given by the United States was January 1, 1990, but this was extended multiple times (see McNally, *supra* note 76 at 26-28; see also *Re Provincial-American Truck Transporters and Teamsters, Local 880* (1991) 18 L.A.C. (4th) 412 (Brent) [*Provincial-American Transport*]). The U.S. regulations were not extended to Canadian truckers until 1996 (see Canada, Library of Parliament, “Current Issue Review. Drug Testing: Legal Implications” (Ottawa: Library of Parliament [catalogue no. YM32-1/90-1-1999-11-IN], 1999) [“Drug Testing: Legal Implications”]). Curiously, the Americans did not target the railway industry until 2001; when the final rule was adopted in 2004, it contained several exceptions for foreign railway workers. See *Control of Alcohol and Drug Use: Expanded Application of FRA Alcohol and Drug Rules to Foreign Railroad Foreign-Based Employees Who Perform Train or Dispatching Service in the United States*, 69 Fed. Reg. 19270 (April 12, 2004), 49 C.F.R. § 219.

<sup>79</sup> R.S.C. 1985, c. 32 (4th Supp.) [emphasis added].

**18. (1)** The Governor in Council may make regulations

...

(b) *declaring positions in railway companies to be critical to safe railway operations;*

(c) respecting the following matters, in so far as they relate to safe railway operations, in relation to persons employed in positions referred to in paragraph (b):

(i) the training of those persons, both before and after appointment to those positions,

(ii) hours of work and rest periods to be observed by those persons,

(iii) minimum medical, including audiometric and optometric, standards to be met by those persons,

(iv) *the control or prohibition of the consumption of alcoholic beverages and the use of drugs by those persons, and*

(v) the establishment of support programs for those persons and standards applicable to such programs...

Section 19 allows the Minister of Transport to delegate the authority to make rules regarding the matters set out in s. 18 to railway companies.<sup>80</sup> Thus, a part of the framework was in place that would allow for the introduction of regulations requiring widespread testing in the railway industry.

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<sup>80</sup> This forms the basis for the authority of the *Canadian Rail Operating Rules*, including “Rule G”. See *supra* note 34, and *infra* note 91.

In 1990, Transport Canada issued a policy document entitled the *Strategy on Substance Use in Safety-sensitive Positions in Canadian Transportation*.<sup>81</sup> The *Strategy on Substance Use* went further than the *Task Force Report*, envisaging “...mandatory testing after an accident, as part of a required medical examination, as a condition of confirming a new or transferred employee in a safety-sensitive position and “for cause” and under a program having a random element in the workplace [for all employees in safety-sensitive positions].”<sup>82</sup> Though the notion of “positions critical to safe rail operations” was left undefined in the *Railway Safety Act*,<sup>83</sup> Transport Canada proposed “...an expanded definition of what constitutes a safety-sensitive position...” that would cover “railway operation/maintenance employees”.<sup>84</sup>

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<sup>81</sup> Transport Canada, *Strategy on Substance Use in Safety-sensitive Positions in Canadian Transport* (Ottawa: Transport Canada Doc. No. TP10201, 1990) [*Strategy on Substance Use*]. The *Strategy on Substance Use* was tabled in the House of Commons by then Transport Minister Doug Lewis on March 16, 1990.

<sup>82</sup> *Ibid.* at 9.

<sup>83</sup> When the Railway Association of Canada eventually adopted rules under the authority granted to it by ss. 18(1)(b), 19 & 20 of the *Railway Safety Act*, *supra* note 79, the definition was “any railway position directly engaged in operation of trains in main track or yard service.. and any railway position engaged in rail traffic control...” See *Railway Rules Governing Safety Critical Positions*, TC No. O-17-A (R.18), 2000 at s. 3. The Task Force on the Control of Drug and Alcohol Abuse in the Railway Industry considered “positions critical to railway safety” to comprise conductors, yardmen, dispatchers, track maintainers, signal maintainers and operators. Equipment maintenance employees were omitted “[b]ecause of a disagreement between CN and CP” about their inclusion in the definition. See *Task Force Report*, *supra* note 76 at 5.

<sup>84</sup> *Strategy on Substance Use*, *supra* note 81 at 10 and Appendix 1. The criteria used to arrive at this definition was positions that “...have a direct impact on either the health, safety or security of the public or of persons who work in the transportation industry, where there is a potential risk of loss of life, injury or property damage. Direct impact was considered to mean engagement in the operation, navigation, repair or inspection of vehicles, and security control.” Commenting this definition, the House of Commons Standing Committee on Transport noted that “...who is included and who is not is a crucial preliminary question. Therefore, it is important to try to be as [*sic.*] fair, reasonable and accurate in defining what is a safety-sensitive position and who should be included.” The Committee went on to mention that representatives from the transport sector expressed concern about the definition being too broad or too narrow. Canada, House of Commons, *Minutes of Proceedings and Evidence of the Standing Committee on Transport* 34<sup>th</sup> Parl. 2<sup>nd</sup> sess., No. 46 (May & June 1990) [*Standing Committee Report*] at 12.

During the hearings that the House of Commons Standing Committee on Transport held on the *Strategy on Substance Use*, it was clear that Transport Canada's intention was to copy the U.S. drug testing regulations. Committee members were concerned that the policy proposed by Transport Canada was "...nothing more than an attempt to appease the Americans and harmonize the two regimes..." and that this would amount to little more than a wholesale importation of the U.S. rules.<sup>85</sup> Ultimately the Committee recommended that Transport Canada adopt a "made in Canada solution", including legislatively mandated alcohol and drug testing of applicants for safety-sensitive positions as well as after an accident and as part of periodic medical testing, but without a random testing component.<sup>86</sup> The Minister of Transport agreed with these recommendations.<sup>87</sup>

Though drafted, the legislation and accompanying regulations were never adopted:

Between 1990 and 1994... little progress was made with respect to the proposed *Strategy*, and it became stalled in the political process. A new Liberal government was elected in the fall of 1993, usurping the Mulroney legislative agenda. By the fall of 1994 the Chretien government had distanced itself from the *Strategy*. Subsequently in late December of that year, the Minister of Transport, Douglas Young, declared that the government would not proceed with enabling legislation...<sup>88</sup>

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<sup>85</sup> McInally, *supra* note 77 at 44-45, citing the *Standing Committee Report*, *supra* note 84. See also McInally, *ibid.* at 100-104.

<sup>86</sup> *Standing Committee Report*, *supra* note 84. See especially the list of recommendations in the executive summary at 17-19.

<sup>87</sup> Transport Canada, *Substance Use in Safety-sensitive Positions in Canadian Transportation: Government Response to the Third Report of the Standing Committee on Transport* (Ottawa: Transport Canada Doc. No. TP10694, 1990).

<sup>88</sup> McInally, *supra* note 77 at 2. See also Mel F. Belich & Michael J. Schewchuk, "Drug Testing in the Transportation Sector: An Employer Perspective" (1994) 2:3 C.L.E.L.J. 516.



One of the reasons for this retreat from the previous government's position was the unpopularity of testing, which was opposed by virtually all of the provinces, by national and provincial trucking associations, by trade unions, and by the Federal Privacy Commission.<sup>89</sup> Another possible reason is that – other than appeasing the United States<sup>90</sup> – there was simply no need; for as we shall see below, the jurisprudence had adopted virtually all of the American norms except random testing, a position that coincided precisely with the government strategy.

#### 2.2.1.2. *Transmission to Canadian Jurisprudence*

As with its American counterpart, the Canadian railway industry may have been particularly amenable to the proposition that alcohol and drug consumption was a safety concern and that drug testing provided a means of reducing workplace accidents. Indeed, the rules governing Canadian railroads include Rule G, which – at the time when the U.S. *Railroad Regulations* were enacted – provided that “[t]he use of intoxicants or narcotics by employees subject to duty, or their possession or

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<sup>89</sup> McNally, *ibid.* at 53-55. See also Canada, Privacy Commission, *Drug Testing and Privacy* (Ottawa: Minister of Supply and Services, 1990).

<sup>90</sup> McNally argues that “...there is considerable evidence to suggest that pressure from the American government was the central impetus behind the creation of the federal initiative in 1990...” and “...the true stimulus for the development of the Strategy is found in the passage of U.S. drug testing rules.” McNally, *ibid.* at 173.

use while on duty is prohibited.”<sup>91</sup> It is thus unsurprising that Canadian railways began subjecting their employees to drug testing prior to the publication of the *Task Force Report* calling for a testing regime.

Not only had testing already begun in the railway industry, but the testing in the railway industry led to the very first arbitration cases dealing with drug testing in Canada. At the same time as the Task Force rendered its final report, the

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<sup>91</sup> Rule G of the *Uniform Code of Operating Rules*, which is a body of rules applying to the movement of trains promulgated by the Canadian Transport Commission since 1976, exercising the authority granted to it by s. 227 of the *Railway Act*, R.S.C. 1970, c. R-2. The rules originated as regulations prescribed by the Canadian Board of Transport Commissioners by General Order #873, dated November 15, 1961 (effective October 28, 1962). The current rules – the *Canadian Rail Operating Rules*, TC O-0-93, 2008 – were adopted and amended from time to time by the Railway Association of Canada (an industry group) and then approved by the Minister of Transport exercising the authority granted by ss. 18(1)(c)(iv), 19 & 20 of *The Railway Safety Act*, *supra* note 79. The current Rule G provides that:

- (i) The use of intoxicants or narcotics by employees subject to duty, or their possession or use while on duty, is prohibited.
- (ii) The use of mood altering agents by employees subject to duty, or their possession or use while on duty, is prohibited except as prescribed by a doctor.
- (iii) The use of drugs, medication or mood altering agents, including those prescribed by a doctor, which, in any way, will adversely affect their ability to work safely, by employees subject to duty, or on duty, is prohibited.
- (iv) Employees must know and understand the possible effects of drugs, medication or mood altering agents, including those prescribed by a doctor, which, in any way, will adversely affect their ability to work safely.

Canadian Railway Office of Arbitration & Dispute Resolution (the “CROA”<sup>92</sup>) rendered the first two decisions in Canada on drug testing.<sup>93</sup>

In the *Hutchinson* case, the grievor was a train conductor who had been charged with the cultivation of a substantial quantity of marijuana – a charge that was subsequently stayed for reasons unrelated to the strength of the Crown’s case. His employer, Canadian Pacific, ordered him to submit to urinalysis screening, which he refused. Though there was no evidence that he had ever been impaired at work, the company terminated his employment on the grounds that participation in “the drug culture” was incompatible with his employment. With regard to the relationship between off-duty drug use and employment, Arbitrator Picher stated:

This case raises, in vivid terms, the issue of the obligations of a railroad in respect of the involvement of its employees in the production, trafficking, possession or use of illegal drugs. There was a time, in the 1960’s, when a substantial body of opinion held that “soft” drugs, and marijuana in particular, were relatively benign substances whose use posed no substantial threat. Those days are gone. *Two decades of experi-*

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<sup>92</sup> The CROA is a consensual arbitration tribunal established by memorandum of agreement in 1965, under the *Canada Labour Code*. Both major railways in Canada, the Canadian National Railway (CN) and the Canada Pacific Railway (CP), and their various unions are parties to the memorandum. The original memorandum of agreement, as well as all CROA decisions are available at the CROA web site at < <http://www.croa.com> >. For a detailed description of the CROA and how it differs from *ad hoc* labour arbitration, see Michel G. Picher “The Canadian Railway Office of Arbitration: Keeping Grievance Hearings on the Rails” (1991) 1 Labour Arbitration Yearbook 37. See also Dennis W. Coughlin, “By Land and by Air: Two Models of Expedited Grievance Resolution” in Joyce M. Najita, ed., *Arbitration 1997 – the Next Fifty Years: Proceedings of the Fiftieth Annual Meeting of the National Academy of Arbitrators* (Edison, NJ: BNA Books, 1999) 110.

<sup>93</sup> *Canadian Pacific Ltd. v. U.T.U. (Hutchinson grievance)* (1987) 31 L.A.C. (3d) 179; [1988] C.L.A.D. No. 61, CROA Case No. 1703 (M.G. Picher) [*Hutchinson* cited to CROA] and *Canadian Pacific Ltd. v. U.T.U. (Keal grievance)* (1987) 7 C.L.A.S. 44, CROA Case No. 1704 (M.G. Picher) [*Keal* cited to CROA]. *Hutchinson* and *Keal* were both released on October 15, 1987. The *Task Force Report*, *supra* note 76 is dated October 1987.

*ence with accidents, both industrial and non-industrial, sometimes tragic in their proportions, caused by the use of prohibited drugs, have gradually affirmed the conclusion that involvement with illegal drugs, including marijuana, poses a dangerous threat to health and safety.*<sup>94</sup>

Though Mr. Hutchinson's refusal to submit to a drug test was not invoked as a reason for termination *per se*, Arbitrator Picher discussed the issue in his award. He claimed that "[t]he policing of drug use among the employees of public carriers is one area in which drug testing has gained increasing acceptance,"<sup>95</sup> and then backed up this claim with reference to exclusively American sources. He reviewed the state of the law in the United States, with particular reference to the *Railroad Regulations*, noting that "[t]he American regulation seeks, insofar as possible, to balance the interest of the railway to ensure safe operations with the interest of the employee not to be unduly deprived of rights of personal dignity and privacy."<sup>96</sup> He recognized that there are no comparable regulations in Canada nor any reported decision on the issue of drug testing. He then went on to state that:

Where, as in the instant case, the employer is a public carrier, and the employee's duties are inherently safety sensitive, any reasonable grounds to believe that an employee may be impaired by drugs while on duty or subject to duty must be seen as justifying a requirement that the employee undergo a drug test. Given contemporary realities and the imperative of safety, that condition must be seen as implicit in the contract of employment, absent any express provision to the contrary...

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<sup>94</sup> *Hutchinson, ibid.* at 2-3 [emphasis added].

<sup>95</sup> *Ibid.* at 3.

<sup>96</sup> *Ibid.* at 4.

What guidance do the foregoing considerations provide in the instant case? It appears to the Arbitrator that a number of useful principles emerge. The first is that as an employer charged with the safe operation of a railroad, the Company has a particular obligation to ensure that those employees responsible for the movement of trains perform their duties unimpaired by the effects of drugs. To that end the Company must exert vigilance and may, where reasonable justification is demonstrated, require an employee to submit to a drug test... The refusal by an employee to submit to such a test, in circumstances where the employer has reasonable and probable grounds to suspect drug use and a risk of impairment, may leave the employee liable to removal from service. It is simply incompatible with the obligations of a public carrier to its customers, employees and the public at large, to place any responsibility for the movement of trains in the hands of an employee whom it has reasonable grounds to suspect is either drug-dependent or drug-impaired... On the other hand, it is not within the legitimate business purposes of an employer, including a railroad, to encroach on the privacy and dignity of its employees by subjecting them to random and speculative drug testing...<sup>97</sup>

Three important features of this passage bear discussing. First, safety is unequivocally the justification for drug testing. The notion of safety-sensitive positions is mobilized (for the first time in Canadian jurisprudence)<sup>98</sup> and appears to have the same scope as in the U.S. *Railroad Regulations*, that is “employees who are responsible for the movement of trains”. Second, the extent of permissible testing and the consequences for the employee mirror with almost perfect precision the U.S. *Rail-*

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<sup>97</sup> *Ibid.* at 4-5. I have heavily edited the quoted section for length, which inevitably excises some of the nuance. However, I am confident that readers who consult the full text of the award will agree that I have not denatured its meaning.

<sup>98</sup> But see *Re Canadian Pacific Ltd. v. Rail Canada Traffic Controllers (Sidoni grievance)* (1981), CROA Case No. 946 (Weatherill) at 2, where it was found that a diagnosed alcoholic could not return to work after absence for treatment unless he was first certified as fit for duty by a doctor, since the duties of a rail traffic controller “...impinge so directly upon the safety of operations.”

*road Regulations* in force at the time of the award (recall, that the award was rendered in 1987, and the U.S. *Railroad Regulations* were not amended to allow for random testing until 1988).<sup>99</sup> Finally, this passage contains the basic framework of the Canadian model as it was articulated almost twenty years later; a model that was described as having evolved over time.

The same arbitrator rendered the *Keal* decision on the same day as the *Hutchinson* decision. The award is significantly shorter and simply relies on *Hutchinson* for its authority. Arbitrator Picher found that Mr. Keal occupied a safety-sensitive position and that his arrest for marijuana possession two hours prior to the beginning of his shift, coupled with his refusal to submit to a drug test, justified his dismissal by Canadian Pacific.<sup>100</sup>

The *Hutchinson* and *Keal* decisions are illustrations of how the rules set out in the U.S. *Railroad Regulations* came to find application in Canada despite the fact – explicitly recognized by Arbitrator Picher – that no legislature had decided to import the U.S. norms. First, the norms were transmitted by the railways themselves, who implemented testing after relying on U.S. data to conclude that testing was necessary. Second, the U.S. *Regulations* and jurisprudence provided the framework within which Arbitrator Picher could conclude that drug testing was legitimate. He was aware of the American drug testing regime and accepted their underlying premise that drug testing is a means of promoting workplace safety. He even adopted the terminology of “safety-sensitive positions”. Third, the immedi-

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<sup>99</sup> See text accompanying note 30, *supra*.

<sup>100</sup> *Keal*, *supra* note 93 at 2.

ate reliance on *Hutchinson* in *Keal* without reference to the American norms demonstrates that once the norms entered legal discourse, they were replicated across the jurisprudence.

Such replication continued. In the late 1980s and early 1990s, the *Hutchinson* decision was routinely cited as the setting out the principles governing drug testing in Canada, though often without reference to its U.S. origins.<sup>101</sup> As these principles spread beyond the railroad industry, so did the notion of “safety-sensitive positions”. From the initial justification of the risk of catastrophic train wrecks, any job with the possibility of injury began to be characterized as safety-sensitive. For instance, in the *City of Winnipeg* case the city sought to impose random testing on a garbage collector who had been found smoking marijuana on the job. The safety concerns related to garbage collection are described as follows:

The grievor works in assisting the loading of a collection vehicle... The helpers pick up refuse and load it into a rear collector, which has a compactor in the back of the hopper of the vehicle. A refuse helper must be certain that he and others are clear of this mechanism when the machine is being operated. Occasionally, members of the public may be around when refuse is being thrown into the truck and must be kept away. Employees have been injured because of not being clear of the vehicle and injuries can be serious, such as a loss of a hand. The grievor is also required to guide the driver of the truck when backing up.<sup>102</sup>

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<sup>101</sup> See, e.g. *Re Canadian National Railway Co. and U.T.U.* (1989) 6 L.A.C. (4th) 381; 14 C.L.A.S. 74 (CROA, M.G. Picher); *Re Quintette Coal Ltd. and U.S.W.A., Local 9113 (Regensberger grievance)* (1989) 14 C.L.A.S. 2 (A. Hope); *Re Inco Ltd., Manitoba Division and U.S.W.A., Local 6166*, [1989] C.L.A.S.J. 557689 (Carr); *Provincial-American Transport*, *supra* note 78; *Re Winnipeg (City) and C.U.P.E., Loc. 500*, (1991) 23 L.A.C. (4th) 441 (Baizley) [*City of Winnipeg*]; *Re Cominco Ltd. and U.S.W.A., Local 480*, [1993] C.L.A.S.J. 584223 (Williams).

<sup>102</sup> *City of Winnipeg*, *ibid.* at 443.

Citing *Hutchinson*, the arbitrator concluded that there was “a legitimate concern over safety”<sup>103</sup> and that the city was justified in imposing the drug tests.

In addition to the transmission demonstrated by the *Hutchinson* decision and its descendants, Canadian jurisprudence came into contact with the American norms through their direct application to Canadian employees. Despite the delay in requiring Canadian companies engaged in cross-border traffic to comply with the U.S. *Railroad Regulations*,<sup>104</sup> Canadian employees were subject to testing while on U.S. soil. Thus, the question arose as to whether a violation of U.S. regulations was just cause for discipline by a Canadian employer. Again, this trend started with a CROA decision rendered by Arbitrator Picher in the railway industry. In that decision,<sup>105</sup> the grievor, Mr. Bernier, was required by U.S. officials to undergo urinalysis after he injured his hand replacing a light on a train. The test was positive for marijuana metabolites and the company dismissed Mr. Bernier for “conduct incompatible with his duties.” Arbitrator Picher found that the *Railroad Regulations* could not be blindly applied to Canadian employees:

*It should be noted that there is no federal regulation in Canada regarding the detection of drugs in the railway industry. Furthermore, to date the Company has issued no internal regulation on this subject. The presumption of impairment, invoked in the American regulation by a positive urine test, has no basis in logic or in science. It is admitted that this test demonstrates only the use*

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<sup>103</sup> *Ibid.* at 446.

<sup>104</sup> See *supra* note 78.

<sup>105</sup> *Re Canadian National Railway and U.T.U. (Bernier)* (1990) 11 L.A.C. (4th) 364, CROA Case No. 2025 (M.G. Picher) [*Bernier* cited to CROA].



of a drug during the sixty days prior to the taking of the sample. It provides no precise information concerning when, where or in what quantity the drug was taken. Therefore, the presumption of impairment is a legal construction decreed for the particular purposes of the American regulation. This same regulation also allows the employee to take advantage of a blood test to refute the presumption that he, or she, was working while under the influence of drugs. In sum, this is a question of a very specialized and extraordinary regulation in the field of working conditions.

There is nothing similar in the Company's regulations in Canada for the purposes of discipline in general. *In the Arbitrator's view, in the absence of a regulation which explains clearly to employees who violate the American regulation that not only could they be forbidden to work in the United States but could also be discharged from the Company in Canada, it is difficult to justify the dismissal of an employee for this reason alone.*<sup>106</sup>

Mr. Bernier was re-instated, but under the condition that he "agree" to undergo period unannounced urine or blood testing. He was also forbidden from working in the U.S. "unless the American authorities permit it and unless the company, at its sole discretion, allows him to do so."<sup>107</sup>

Whereas the *Hutchinson* case notes the absence of transplant attempts, the *Bernier* case shows the failure of harmonization attempts as a mechanism of norm transmission. The Canadian railways attempted to harmonize their labour practices with the U.S. *Railroad Regulations*, but apparently ran up against a Canadian

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<sup>106</sup> *Ibid.* at 3 [emphasis added].

<sup>107</sup> *Ibid.* at 4. See also *Provincial-American Transport*, *supra* note 78 (holding that the company could not rely on the requirements of the U.S. regulations to ground authority to impose periodic drug testing on its drivers). But see, *Milazzo v. Autocar Connaisseur Inc.*, (2003) 47 C.H.R.R. 468, where the Canadian Human Rights Tribunal decided that the existence of the U.S. regulations justified imposing testing on Canadian bus drivers.

jurisprudence that was not amenable to such harmonization. And yet these cases are both sites at which the U.S. norms took hold. They are pivotal in the so-called “development of the Canadian model” by virtue of the approach that they adopt in deciding whether or not employers have the right to unilaterally impose drug testing policies. As we shall see below,<sup>108</sup> this approach came to structure the justification of drug testing in terms of the balancing of employers’ interests and the privacy rights of their employees. This “balancing of interests test” became one of the cornerstones of the reasoning behind Canadian model.

Before we look at the justification for testing under the Canadian model, we will take a brief look at the other way in which drug testing norms were transmitted from the U.S.: corporate personnel policies.

### 2.2.2. *Transmission of of Drug Testing Norms by Corporate Policy*

The transmission of drug testing norms via the transportation industry was relatively direct. The U.S. *Railroad Regulations* and the attendant concept of “safety-sensitive positions” entered the Canadian legal landscape through reference to the U.S. jurisprudence (as in the *Hutchinson* and *Keal* decisions) or through their application to Canadian-based transportation workers (as in the *Bernier* and *Provincial-American Transport* decisions). However, drug testing also came to Canada indirectly

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<sup>108</sup> See 3.2.1, below.

through personnel policies adopted by U.S. companies and then applied to employees of their Canadian operations.<sup>109</sup>

Tracing this process is more difficult than in the case of the *Railroad Regulations*. In the latter case, we are dealing with an explicit body of state law adopted, promulgated and published in such a way as to allow for its easy identification and tracking. Corporate policies are, on the other hand, generally adopted without public consultation and promulgated by employers in multiple ways. They are rarely published; when they are, it is in a decentralized fashion lacking the citation and referencing apparatus of state law.<sup>110</sup>

This is not to say that corporate policies are less important or have fewer effects than state law. Insofar as the legitimacy and efficacy of laws are related to their ability to structure expectations, create obligations and implement sanctions, corporate drug policies are arguably *more* important than state law.<sup>111</sup> Indeed, as I argued above, this was one of the initial reasons that employment drug testing was envisioned in the United States in the first place; as a demand reduction strategy

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<sup>109</sup> See also GuyLaine Charles, *Mandatory Drug Testing in Employment* (LL.M. Thesis, Dalhousie University, December 1999) at 29 claiming that “[i]n Canada, subsidiaries of American companies have been requesting drug tests from their employees for years.”; “Drug Testing: Legal Implications”, *supra* note 78 at 18, stating that “[t]he influence of the American ‘war on drugs’ has also been felt by Canadian subsidiaries of American firms.”; Tee L. Guidotti, *et al.*, “Occupational medicine in Canada in 1996” (1997) 47(1) *Occupational Medicine* 45 at 50.

<sup>110</sup> One way in which the norms that are expressed in corporate policies migrate across organizations is through the publication of “model policies” in the specialized human resources or management literature. In the context of drug testing, see *e.g.* Barbara Butler, “Developing a Company Alcohol and Drug Policy” (1994) 2:3 *C.L.E.L.J.* 484.

<sup>111</sup> On the idea that corporate personnel policies relating to drug testing constitute a quasi-autonomous legal order see Andrée Lajoie, *Pouvoir disciplinaire et tests de dépistage de drogues en milieu de travail: illégalité ou pluralisme* (Cowansville : Yvon Blais, 1995).

more efficient than the criminal law.<sup>112</sup> But the *efficacy* of corporate personnel policies in no way entails their *visibility* from an outside perspective. Thus, what we can discover about such policies is largely, though not exclusively, determined by the extent to which they come into contact with state law. The vast majority of this contact is through litigation instituted before adjudicative bodies of the state. Ironically then, it is through “standard” jurisprudence that we have access to the non-state normative orders that comprise corporate personnel policies.

While the scope of the transmission phenomenon is therefore difficult to establish, it is clear that many Canadian production facilities either had drug testing policies imposed upon them by their American head offices or parent corporations, or were required by their U.S. counterparts to formulate their own policies.<sup>113</sup>

### 2.3. *Principles Regulating Testing Under the Model*

The early Canadian cases dealt virtually exclusively with individual grievances filed by employees who had been disciplined after either “failing” a drug test or refusing to submit to one. To the extent that the legality of testing *per se* was touched upon, it was as an incidental question to the main issue before the board of arbitration. The later cases cited in *Imperial Oil* as constituting the Canadian model dealt directly with employers’ right to test in general. This appears to be the result of two interrelated processes. First, faced with a jurisprudence that re-

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<sup>112</sup> See text accompanying note 21.

<sup>113</sup> See *e.g. Trimac Transportation Services - Bulk Systems and T.C.U. (Re)* (1999) 88 L.A.C. (4th) 237.

quired drug testing to be done in accordance with explicit policies, employers who hadn't already formalized their approach to drug testing did so by adopting detailed policies. Second, there was a change in union litigation strategy; rather than challenge drug-related disciplinary action on a case-by-case basis, unions began to overtly challenge the legitimacy of drug testing in the workplace by filing collective grievances as soon as such policies were adopted.

### 2.3.1. *Privacy Rights and the "Balancing of Interests" Test*

Though the primary basis of the initial policy challenges was an alleged violation of employees' privacy rights, they were not grounded in human rights law. Instead, unions framed their arguments in terms of traditional principles of labour law restricting employers' authority to unilaterally promulgate personnel policies in workplaces governed by a collective agreement.<sup>114</sup> The applicable labour law principles were derived from the 1965 *KVP* case<sup>115</sup>, which continues to be cited in drug testing decisions that apply the Canadian model.<sup>116</sup> In *KVP*, Arbitrator Robinson described the principles as follows:

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<sup>114</sup> This was due to the fact that it was already well-established that application of the Canadian *Charter of Rights and Freedoms* is limited to government action and thus does not apply in private litigation. The principle was confirmed by the Supreme Court in *RWDSU v. Dolphin Delivery Ltd.*, [1986] 2 S.C.R. 573, see especially ¶ 26 and *ff.* The *Charter* is not considered in *Hutchinson*, *supra* note 93, nor in *Keal*, *supra* note 93, nor in *Bernier*, *supra* note 105. In *Provincial-American Transport*, *supra* note 78, the arbitrator clearly states that "[t]his is a case to which the Canadian Charter of Rights and Freedoms does not apply." On the role of the *Charter* in drug testing cases see B. Hovius, S. J. Usprich. & R.M. Solomon, "Employee Drug Testing and the Charter" (1994) 2:3 C.L.E.L.J. 345.

<sup>115</sup> *Re Lumber & Sawmill Workers' Union, Loc. 2537 and KVP Co.* (1965), 16 L.A.C. 73 (Robinson) [*KVP*].

<sup>116</sup> See *e.g. Imperial Oil*, *supra* note 72; *Re Weyerhaeuser Company Ltd. and Communications, Energy and Paperworkers Union, Local 447 (Roberto)* (2006) 154 L.A.C. (4th) 3 (Sims); *Re Bantrel Constructors Co. and U.A., Loc. 488* (2007) 162 L.A.C. (4th) 122 (Smith).

A rule unilaterally introduced by the company, and not subsequently agreed to by the union, must satisfy the following requisites:

1. It must not be inconsistent with the collective agreement.
2. It must not be unreasonable.
3. It must be clear and unequivocal.
4. It must be brought to the attention of the employee affected before the company can act on it.
5. The employee concerned must have been notified that a breach of such rule could result in his discharge if the rule is used as a foundation for discharge.
6. Such rule should have been consistently enforced by the company from the time it was introduced.<sup>117</sup>

The first drug testing case to explicitly apply *KVP* was rendered by Arbitrator Picher in the *Bernier* decision, in which he found that the fifth principle had been violated, namely that CN employees had not been informed that “violation of the American regulation could result in the termination of [their] services, not only in the United States but also in Canada.”<sup>118</sup>

But it is the second *KVP* criterion, that of reasonableness, which allowed for the privacy rights of employees to become a legally cognizable issue in the context of labour arbitration. In *Provincial-American Transport*, Arbitrator Brent made the analogy between employee searches and drug testing, as follows:

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<sup>117</sup> *KVP*, *supra* note 115.

<sup>118</sup> *Supra* note 105 at 3.

There is no doubt that a carrier using the public highways must be very sensitive to safety, and that impaired drivers can jeopardize the lives and property of many others... Canadian jurisdictions have made clear policy statements indicating a desire to rid the roads of impaired drivers. Having said that, the public good does not necessarily require a wholesale disregard for personal liberty. Is there any reason then to treat the issue of drug and alcohol testing as being so different from searches to prevent employee theft – cases where the interests of the employer in safeguarding his property and the privacy interests of the employees have been balanced for years? We think not.<sup>119</sup>

He went on to determine that the policy of universal drug testing was unreasonable “even accepting the obvious safety concerns”, since there was no evidence of a drug problem in the company nor that existing mechanisms for ensuring safety were unsatisfactory.<sup>120</sup>

Here we see an early reference to the structure of justification that would come to govern a key component of the Canadian model. The reasonableness of drug testing policies depends on the *balancing* of employees’ privacy interests with the interests of the employer. Absent evidence that the policy is required to further the employer’s interests, the privacy interest of the employees prevails. The unstated difference between employee searches and drug testing is the employer interest that is at stake; in the first case it is “safeguarding his property” whereas in the second case it is promoting safety.

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<sup>119</sup> *Supra* note 78 at 424.

<sup>120</sup> *Ibid.* at 425.

This characterization of the balancing of interests test as weighing employees' privacy against safety was clearly set out in the *Esso Petroleum* case, which cites *Provincial-American Transport*.<sup>121</sup> Curiously, however, the larger part of the decision is guided by the decisions of the U.S. Supreme Court in *Skinner*<sup>122</sup> and *Von Raab*.<sup>123</sup> In both of those cases, the Court's decision judged the permissibility of a practice by "balancing its intrusion on the individual's Fourth Amendment interests against its promotion of legitimate governmental interests".<sup>124</sup> Even more curiously, Arbitrator McAlpine's reliance on the U.S. jurisprudence has been systematically evacuated from the conventional story of the development of the Canadian model. McAlpine's decision – and the balancing of interest test in particular – are commonly cited as key elements of a uniquely Canadian jurisprudence.<sup>125</sup>

Finally, we can see how the "balancing of interest" test arrived in Canada in several different ways. In addition to the explicit reference to the U.S. jurisprudence, Arbitrator McAlpine relies on the *Hutchinson* case (both directly, and by citing *Provincial-American Transport*, which in turn relies on *Hutchinson*). Recall, that in *Hutchinson*, which was rendered prior to the U.S. Supreme Court decisions, Arbi-

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<sup>121</sup> *Re Esso Petroleum Canada and Communications, Energy & Paperworkers Union, Local 614*, [1994] B.C.C.A.A.A. No. 244, 56 L.A.C. (4th) 440 (McAlpine) [*Esso Petroleum*, cited to B.C.C.A.A.A.]. Note that Esso is a property of Imperial Oil.

<sup>122</sup> *Supra* note 66.

<sup>123</sup> *Supra* note 69.

<sup>124</sup> *Skinner*, *supra* note 66 at 619 [citing *Delaware v. Prouse*, 440 U.S. 648 (1979)].

<sup>125</sup> This can be at least partially explained by the fact that the case is usually cited to a summary found in the ubiquitous L.A.C. ("Labour Arbitration Cases") reporter rather than to the full text version that appears in B.C.C.A.A.A. ("British Columbia Collective Agreement Arbitration Awards" – a Quicklaw database).



trator Picher describes the American *Railroad Regulations* as striking a balance between a railroad's interest in safe operations and employee privacy rights.<sup>126</sup>

The outcome of *Esso Petroleum*, with regard to drug testing was:

- Mandatory random testing prescribed for safety-sensitive employees is acceptable in the context of rehabilitation but only for a reasonable period of time.
- Mandatory random testing prescribed for safety-sensitive employees is otherwise unacceptable.
- Mandatory testing of all employees after a significant work accident, incident or near miss is acceptable.
- Mandatory testing of all employees on the basis of reasonable and probable grounds is acceptable.<sup>127</sup>

Note that these are precisely the four circumstances under which testing is allowed in the Canadian model as it was described by Arbitrator Picher in the *Imperial Oil* case.<sup>128</sup> They are also virtually identical to the testing circumstances set out in the U.S. *Railroad Regulations* in 1987.

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<sup>126</sup> See text accompanying note 96.

<sup>127</sup> *Esso Petroleum*, *supra* note 121 at ¶ 189.

<sup>128</sup> *Supra* note 72.

The balancing of interest test and its consequences continue to apply relatively unchanged.<sup>129</sup>

### 2.3.1.1. *The Curious Case of Privacy in Quebec*

Quebec is unique among the Canadian provinces in the protection that it affords privacy interests. Unlike the various human rights codes in the other provinces,<sup>130</sup> Quebec's *Charter of Human Rights and Freedoms*<sup>131</sup> offers specific protection of the right to privacy. The Quebec *Charter* provides:

4. Every person has a right to the safeguard of his dignity, honour and reputation.
5. Every person has a right to the respect for his private life...
9. Every person has a right to non-disclosure of confidential information...

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<sup>129</sup> *Canadian National Railway Co. and C.A.W.-Canada (Re)* (2000) 95 L.A.C. (4th) 341 (M.G. Picher) [*CN & CAW*] (balancing of interests test justifies reasonable cause and post-accident testing for risk-sensitive employees); *Re Fording Coal Ltd. and United Steelworkers of America, Local 7884 (Shypitka grievance)*, (2001) 94 L.A.C. (4th) 354 (Hope) (balancing of interests test justifies subjecting an employee with a history of drug problems to random testing for a period of two years); *Re Fording Coal Ltd. and United Steelworkers of America, Local 7884 (Cryderman grievance)*, (2003) 119 L.A.C. (4th) 165 (Devine) (balancing of interests test justifies post-incident testing for those in safety-sensitive positions, but only if an investigation has first ruled out mechanical or environmental causes); *ADM Agri-Industries Ltd. v. National Automobile, Aerospace, Transportation and General Workers' Union of Canada (CAW-Canada), Local 195 (Substance Abuse Policy Grievance)* [2004] C.L.A.D. No. 610 (Springate) (balancing of interest test justifies post-incident, reasonable cause, and post-rehabilitation testing). See also the four awards listed by Arbitrator Picher in *Imperial Oil, ibid.* at ¶ 100. See also Donald J.M. Brown & David M. Beatty, *Canadian Labour Arbitration*, 4<sup>th</sup> ed. (Aurora Ont.: Canada Law Book, 2007) at 7:6152.

<sup>130</sup> In British Columbia, see the *Human Rights Code*, R.S.B.C. 1996, c. 2; in Alberta, see the *Human Rights, Citizenship and Multiculturalism Act*, R.S.A. 1980, c. H-14; in Saskatchewan, see the *Human Rights Code*, S.S. 1979, c. S-24.1; in Manitoba, see the *Human Rights Code*, S.M. 1987, c. H-175 (as amended); in Ontario, see the *Human Rights Code*, R.S.O. 1990, c. H.19; in New Brunswick, see the *Human Rights Act*, R.S.N.B. 1973, c. H-11; in Nova Scotia, see the *Human Rights Act*, R.S.N.S. 1989, c. 214; in Prince Edward Island, see the *Human Rights Act*, R.S.P.E.I. 1988 c. H-12; in Newfoundland and Labrador, see the *Human Rights Code*, R.S.N.L. 1990, c. H-14 (as amended).

<sup>131</sup> R.S.Q., c. C-12.

Furthermore, in addition to protecting privacy rights with the same scope as the Quebec *Charter*,<sup>132</sup> the Civil Code of Québec specifically provides that no person may be made to give a specimen without his or her free and enlightened consent.<sup>133</sup> Thus, unlike the common law provinces and the federal jurisdiction,<sup>134</sup> from which the majority of the arbitration jurisprudence dealing with drug and alcohol policies emanates, Quebec has a quasi-constitutional statutory scheme protecting the right to privacy.

Insofar as the Quebec *Charter* grants privacy *rights* and not common law privacy *interests*, it can be argued that the burden an employer in Quebec must meet in order to justify drug and alcohol testing is stricter than that the “balancing of interests” test set out in the arbitral jurisprudence from the rest of Canada. The few cases on drug testing from Quebec, however, do not appear to diverge significantly from the Canadian model.<sup>135</sup>

The Quebec Court of Appeal recently confirmed this trend in the *Goodyear* case. In that case, the union appealed a decision of the Superior Court refusing an application for judicial review of an arbitral award that confirmed the em-

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<sup>132</sup> Arts. 10 & 11 C.C.Q.

<sup>133</sup> Art. 3 C.C.Q.

<sup>134</sup> The *Privacy Act*, R.S.C. 1985, c. P-21 only applies to government institutions. As its name suggests, the *Personal Information Protection and Electronic Documents Act*, S.C. 2000, c. 5 is primarily concerned with documents, and does not grant the kind of privacy right as Quebec law does.

<sup>135</sup> See e.g. *Teamsters Québec, section locale 973 et Aliments Ultima inc.*, D.T.E. 2004T-1115 (T.A.); *Syndicat canadien des communications, de l'énergie et du papier, section locale 143 et Goodyear Canada Inc.* (April 12, 2005, Arbitrator D. Tremblay, unreported) aff'd *Section locale 143 du Syndicat canadien des communications, de l'énergie et du papier c. Tremblay*, 2006 QCCS 2128, [2006] R.J.D.T. 617, D.T.E. 2006T-449, quashed in part on appeal, *Section locale 143 du Syndicat canadien des communications, de l'énergie et du papier c. Goodyear Canada inc.*, 2007 QCCA 1686 [*Goodyear*]. Full disclosure: I was one of the attorneys who acted for the union in the *Goodyear* case.

ployer's right to subject employees in "safety-sensitive positions"<sup>136</sup> to random and unannounced drug tests. Relying on previous decisions relating to the right to privacy,<sup>137</sup> the Court applied the *Oakes* test<sup>138</sup> and found that though such testing was adopted in the pursuit of a legitimate objective that there were less intrusive ways of achieving this objective.<sup>139</sup> Random testing was therefore not allowed.

In the final two paragraphs of the judgement, in what is arguably an *obiter* remark, the Court cites the passages from *Imperial Oil* that refer to the "Canadian model", stating that it provides an "interesting comparison".<sup>140</sup> This comparison is particularly odd, since the Court could have found ample grounds for applying something like the balancing of interests test using the current Quebec jurisprudence. Indeed, the Supreme Court has specifically stated that when applying

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<sup>136</sup> In French, "*postes à risque élevé*" or literally "high risk positions".

<sup>137</sup> Notably, *Syndicat des travailleuses et travailleurs de Bridgestone/Firestone de Joliette (C.S.N.) c. Trudeau*, [1999] R.J.D.T. 1075 (C.A.), see ¶ 17 of *Goodyear* (appeal).

<sup>138</sup> *Goodyear*, *supra* note 135 (appeal) at ¶ 18. The *Oakes* test is in reference to *R. v. Oakes*, [1986] 1 S.C.R. 103 (setting how to determine the limits that can be put on fundamental rights in a free and democratic society). In using the *Oakes* test to determine the scope of legitimate violations of fundamental rights by private parties, rather than the state, the Court implicitly refused to apply the distinction set out by the Supreme Court of Canada in *Syndicat Northcrest v. Anselem* [2004] 2 S.C.R. 551 [*Anselem*] and *Multani c. Commission scolaire Marguerite-Bourgeoys*, [2006] S.C.R. 256 [*Multani*]. In those cases, the Supreme Court distinguished the first and second paragraphs of s. 9.1. of the Québec *Charter*, *supra* note 131 and found that the *Oakes* test is not the applicable standard in cases where the alleged violation of a fundamental right is not perpetrated by the state.

<sup>139</sup> *Goodyear*, *ibid.* at ¶ 19 and 23-32. The Court skips the part of the *Oakes* test in which it must be demonstrated that there exists a rational connection between the objective (reducing workplace accidents) and the means employed (drug testing). It appears, however, that the absence of such a connection is in fact the true basis for their decision (see especially ¶ 25, where the Court states: "Bien que cette usine présente un mauvais dossier en matière d'accidents du travail, aucun lien n'a été établi entre cette situation et la consommation d'alcool et de drogues.")

<sup>140</sup> *Ibid.* at ¶ 33-34. This passage is disconnected from the rest of the judgement and plays no explicit role in Court's reasoning. This absence of explanation leads me to believe that the sole purpose of the citation is to demonstrate that, even if the reasoning applicable in Quebec is somewhat different than elsewhere in Canada, the result is perfectly in stride with the "Canadian model".

s. 9.1 of the Quebec *Charter* in the context of a conflict between private parties, a court should seek to balance their rights.<sup>141</sup>

### 2.3.2. *Discrimination Against the Addicted: Real and Perceived Handicaps*

An important element of any drug testing regime is the consequences that flow from a positive test. Early Canadian arbitration cases framed this question in terms of the general principles governing discipline in the workplace. These principles had already been applied to cases of employee consumption and/or impairment at work, which existed prior to the implementation of drug testing.<sup>142</sup>

With the advent of mass drug testing in the absence of reasonable suspicion of consumption or impairment, however, concerns began to be raised that employers were thereby discriminating against drug-dependent employees. The

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<sup>141</sup> See *Anselem and Multani*, *supra* note 138.

<sup>142</sup> See *e.g.* *Re Brotherhood of Electrical Workers Local 911 and Windsor Utilities Commission* (1958) 8 L.A.C. 328 (Honrahan) (drinking during lunch break does not justify suspension if the employee was not impaired at work); *Sudbury Mine Workers, Local 598 and Falconbridge Nickel Mines Ltd.* (1962), 12 L.A.C. 270 (Thompson) (discipline is only justified if the employee's impairment renders him or her unable to perform duties in a satisfactory way); *Re Dominion Stores Ltd. and Retail, Wholesale & Department Store Union, Local 414* (1976) 16 L.A.C. (2d) 7 (Hinnegan) (possession of marijuana on company premises justifies a four-month suspension but not discharge); *Firestone Steel Products of Canada and United Automobile Workers, Local 27* (1977) 17 L.A.C. (2d) 185 (Rayner) (impairment by marijuana while at work justifies discharge); *Re Indalloy, Division of Indal Ltd. and United Steelworkers, Local 2729* (1979) 22 L.A.C. (2d) 202 (Kennedy) (possession of marijuana with the intent to consume it at work does not justify discharge but does justify a five-month suspension); *Re Steel Company of Canada Ltd. and United Steelworkers* (1979) 14 L.A.C. (2d) 405 (Rayner) (marijuana consumption at work justifies discharge); *Re Air Canada and International Assoc. of Machinists* (1976) 10 L.A.C. (2d) 346 (Morin) (habitual off-duty marijuana use is not grounds for discipline absent evidence of impairment at work).

various human rights commissions were apparently the first to raise this issue.<sup>143</sup>

In *Provincial-American Transport*, Arbitrator Brent remarked:

This is a case to which the Canadian *Charter of Rights and Freedoms* does not apply. Further, we were not cited any decisions of either the Canadian Human Rights Commission or the Ontario Human Rights Commission regarding drug testing. *Based on the policy papers from those bodies which were filed with us, it would appear that their view is that evidence of a particular problem would be required before drug and alcohol testing would be countenanced under existing human rights legislation.*<sup>144</sup>

The application of anti-discrimination law to drug-testing policy was eventually decided by the Federal Court of Appeal in the 1998 *TD Bank* case<sup>145</sup> and the Ontario Court of Appeal in 2000 *Entrop* case.<sup>146</sup> As we shall see, these cases deploy different reasoning to come to the same conclusions as the arbitral jurisprudence. Unsurprisingly, the decisions were easily integrated in the Canadian model.

### 2.3.2.1. *Human Rights Decisions by the Higher Courts*

The *TD Bank* case arose after the Toronto Dominion Bank adopted a new drug testing policy in 1990. In his decision, Roberston, J.A. describes the policy as follows:

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<sup>143</sup> See e.g. Canadian Human Rights Commission, *The Canadian Human Rights Commission Policy on Mandatory Drug Testing* (Ottawa: CHRC Research & Policy Branch, 1987 [Policy 88-1]); Ontario Human Rights Commission, *Policy on Drug and Alcohol Testing* (1996); Commission des droits de la personne et des droits de la jeunesse du Québec, *La compatibilité avec la Charte québécoise des tests de dépistage de drogue en emploi*, by Claire Bernard (Québec: CDPD) [Cat. 2.120.12.13], 1998).

<sup>144</sup> *Supra* note 78 at 426.

<sup>145</sup> *Canada (Human Rights Commission) v. Toronto-Dominion Bank*, 1998 CanLII 8112 (F.C.A.), [1998] 4 F.C. 205, 163 D.L.R. (4th) 193, 32 C.H.R.R. 261, 38 C.C.E.L. (2d) 8 [*TD Bank*].

<sup>146</sup> *Entrop v. Imperial Oil Limited*, 2000 CanLII 16800 (On. C.A.), 50 O.R. (3d) 18, 189 D.L.R. (4th) 14, 2 C.C.E.L. (3d) 19, 37 C.H.R.R. 481, 137 O.A.C. 15 [*Entrop*, cited to CanLII].

[The policy] requires all new and returning employees to submit to a urine drug test within 48 hours of accepting an offer of employment. This requirement is printed on the Bank's application for employment form which states that it is a condition of employment that a person undergo drug testing for "illegal substances"...

New or returning employees who refuse to submit to the drug test are dismissed for failing to comply with a condition of employment. Employees who test positive and are drug dependent, may lose their employment if they refuse to take advantage of the rehabilitation services made available to them or if rehabilitation efforts prove unsuccessful. So-called casual users of illicit substances, that is non-dependent drug users, may also lose their employment if they persist in using such drugs after having tested positive on at least three occasions...<sup>147</sup>

The Canadian Civil Liberties Association (the "CCLA") saw this as a violation of the *Canadian Human Rights Act*,<sup>148</sup> which specifically prohibits employment discrimination on the grounds of "... previous or existing dependence on alcohol or a drug."<sup>149</sup> The CCLA filed a complaint with the Canadian Human Rights Commission, which in turn seized the Canadian Human Rights Tribunal. The case eventually made its way to the Federal Court of Appeal via a decision by a Federal Court motions judge on an application for judicial review of the Tribunal's decision.

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<sup>147</sup> *TD Bank*, *supra* note 144 at ¶ 6-7.

<sup>148</sup> R.S.C. 1985, c. H-6. The reason that federal legislation applies is that banks, including their employment relationships, fall under the federal jurisdiction by virtue of s. 91(15) of the *Constitution Act, 1867* (U.K.), 30 & 31 Vict., c. 3, reprinted in R.S.C. 1985, App. II, No. 5.

<sup>149</sup> *Canada Human Rights Act*, *ibid.* The definition of disability is found at s. 10. Section 3(1) includes disability as a "prohibited ground" of discrimination, and s. 10 sets out the definition of a "discriminatory practice" in employment.

Robertson, J.A., found that the policy was discriminatory, since “[a]n employment policy aimed at ensuring a work environment free of illegal drug use must necessarily impact negatively on those who are drug dependent.”<sup>150</sup> Furthermore, the discrimination could not be justified because it was neither reasonably necessary, nor rationally connected to job performance.<sup>151</sup>

McDonald, J.A., in his concurring opinion, found that the policy constituted indirect discrimination since the neutral rule (“employees must be drug-free”) had more serious consequences for a group that is protected under the *Human Rights Act* (drug dependent employees).<sup>152</sup> He continues, finding that such a policy could be truly neutral (*i.e.* not cause adverse effects to a protected group) in some circumstances. The circumstances he cites are cases where the policy is implemented in a “safety sensitive industry”. He writes:

For instance, a policy aimed at achieving a drug and alcohol free work place can be neutral if it is concerned with work performance and seeks to rehabilitate those whose work performance has been affected as a result of their drug dependency. *Indeed, drug testing in safety sensitive industries is allowed and pursued. The concern, therefore, should be to ensure that the policy is designed*

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<sup>150</sup> *TD Bank*, *supra* note 144 at ¶ 24. Note that the judgement contains three different sets of reasons. Robertson, J.A., found that the policy was directly discriminatory and in the alternative that it constituted unjustified indirect discrimination; McDonald, J.A., found that the policy constituted unjustified indirect discrimination; Isaac, C.J., dissented, finding that if the policy were indirectly discriminatory it was justified on the grounds that being free from drugs is a *bona fide* occupational requirement.

<sup>151</sup> The “reasonably necessary” and “rational connection” tests were, at the time of the judgement, distinct tests used to determine whether a practice that is *prima facie* discriminatory is nevertheless justified. Since the Supreme Court abandoned the distinction between direct discrimination and indirect or “adverse effect” discrimination in *British Columbia (Public Service Employee Relations Commission) v. BCGSEU*, [1999] 3 S.C.R. 3 [*Meiorin*], there is now only one test.

<sup>152</sup> *TD Bank*, *supra* note 144 at ¶ 4.



*to meet the requirements of the CHA [Canadian Human Rights Act] rather than with banning these policies altogether...*

*It is relatively easy to imagine a situation where a drug testing policy would likely be upheld: one is in a safety sensitive industry that has a policy of drug testing for cause (where an employee's work performance has been affected by drugs.) Having established this is a valid BFOR [bona fide occupational requirement] defence, there is no duty to accommodate: the disabled person can be dismissed.<sup>153</sup>*

Thus, in a case involving discrimination, where the governing legal principles and applicable legislation are radically different from those applicable to privacy in the context of a collective bargaining relationship, the Federal Court of Appeal comes to precisely the same conclusion as the arbitration jurisprudence: drug testing is justified when it is implemented in a safety sensitive industry, and then, only for cause.

A similar result was arrived at in the *Entrop* case.<sup>154</sup> In that case, Imperial Oil's drug and alcohol policy was challenged by Mr. Entrop, who filed a complaint with the Ontario Human Rights Commission. The facts that led to the litigation were simple:

The respondent Martin Entrop suffered from alcohol abuse in the early 1980s. Although he had not had a drink for over seven years, because he worked in what Imperial Oil classified as a safety-sensitive job, the

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<sup>153</sup> *Ibid.* at ¶ 11-12, emphasis added.

<sup>154</sup> *Supra* note 145. The relationship between *Entrop* and *TD Bank* is complex. The Ontario Human Rights Commission Board of Inquiry had rendered an initial decision in *Entrop* by the time that the *TD Bank* decision was rendered, and that decision is cited by the Federal Court of Appeal. However, the procedural complexities of *Entrop* (where the Board rendered eight distinct decisions) resulted in the appeal being heard after *TD Bank* was rendered. So *TD Bank* is cited in the Ontario Court of Appeal's decision in *Entrop*.

Policy required him to disclose his previous alcohol abuse problem to management. When he disclosed it, he was automatically reassigned to another job.<sup>155</sup>

The Board of Inquiry appointed by the Ministry of Labour expanded the scope of its inquiry to include all aspects of the policy, ultimately deciding that policy's provisions for drug and alcohol testing were in violation of the *Ontario Human Rights Code*.<sup>156</sup> By the time it had reached the Ontario Court of Appeal, the question of the legality of testing had become the primary issue.

Though the *Ontario Human Rights Code* does not specifically reference addiction in the way that the *Canadian Human Rights Act* does, the Court upheld the Board's finding that substance abuse is a handicap. Furthermore, the *Ontario Human Rights Code*, prohibits discrimination against anyone who "has or has had, or is believed to have or have had" a handicap.<sup>157</sup> This caused the court to remark:

Thus, though the social drinker and casual drug user are not substance abusers and, therefore, not handicapped, Imperial Oil believes them to be substance abusers for the purpose of the Policy. In other words, Imperial Oil believes that any person testing positive on a pre-employment drug test or a random drug or alcohol test is a substance abuser... Imperial Oil applies sanctions to any person testing positive – either refusing to hire, disciplining or terminating the employment of that person – on the assumption that the person is likely to be impaired at work currently

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<sup>155</sup> *Ibid.* at ¶ 2.

<sup>156</sup> R.S.O. 1990, c. H.19, as amended. Compare *Alberta (Human Rights and Citizenship Commission) v. Kellogg Brown & Root (Canada) Company*, 2007 ABCA 426 (CanLII), where the Alberta Court of Appeal refused to declare illegal a drug testing policy on the grounds that the individual complainant was not handicapped and that the Human Rights Panel was not validly seized of a general complaint that allowed for a decision on the general validity of the impugned policy.

<sup>157</sup> *Ontario Human Rights Code, ibid.* at ss. 5(1) and 10.

or in the future, and thus not “fit for duty.” Therefore, persons testing positive on an alcohol or drug test – perceived or actual substance abusers – are adversely affected by the Policy. The Policy provisions for pre-employment drug testing and for random alcohol and drug testing are, therefore, *prima facie* discriminatory. Imperial Oil bears the burden of showing that they are *bona fide* occupational requirements.

The “*bona fide* occupational requirement” test to which the Court refers here had undergone some refinement since *TD Bank*, where two distinct tests (the “reasonably necessary” test and “rational connection” test) were applied.<sup>158</sup> These tests were premised on the distinction between direct and indirect (or adverse effect) discrimination, a distinction that was jettisoned. Since 1999, the courts apply a “unified approach” that imposes a single test to determine whether a *prima facie* discriminatory employment standard is justified:

An employer may justify the impugned standard by establishing on the balance of probabilities:

- (1) that the employer adopted the standard for a purpose rationally connected to the performance of the job;
- (2) that the employer adopted the particular standard in an honest and good faith belief that it was necessary to the fulfilment of that legitimate work-related purpose; and
- (3) that the standard is reasonably necessary to the accomplishment of that legitimate work-related purpose. To show that the standard is reasonably necessary, it must be demonstrated that it is impossible to accommodate individual employees shar-

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<sup>158</sup> *Meiorin*, *supra* note 150. See also *British Columbia (Superintendent of Motor Vehicles) v. British Columbia (Council of Human Rights)*, [1999] 3 S.C.R. 868, 181 D.L.R. (4th) 385.

ing the characteristics of the claimant without imposing undue hardship upon the employer.<sup>159</sup>

In *Entrop*, the Court found that the purpose of the policy was to promote workplace safety and that reducing workplace impairment was rationally connected to that objective. It also found that Imperial Oil honestly believed that its policy was necessary to meet this objective. The real question for the Court was thus whether drug testing was reasonably necessary.

The Court found that random testing was *not* reasonably necessary for the simple reason that urinalysis drug testing is unable to detect current impairment. Since a positive test tells the employer nothing as to the employees capacity to do the job safely, testing cannot be reasonably necessary to promote workplace safety.<sup>160</sup> Furthermore, termination of employment after a positive test is far more drastic than is necessary – Imperial Oil had not shown that it was impossible to adjust its sanctions in order to accommodate drug-dependent employees.<sup>161</sup> Both of these arguments were also applied by the Court to pre-employment testing.<sup>162</sup>

The Court also endorsed the Board’s finding that testing based on reasonable suspicion and after an accident or incident (as part of a “larger assessment”) were justified.<sup>163</sup>

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<sup>159</sup> *Meiorin, ibid.* at ¶ 54.

<sup>160</sup> *Entrop, supra* note 145 at ¶ 99.

<sup>161</sup> *Ibid.* at ¶ 100-102.

<sup>162</sup> *Ibid.* at ¶ 99.

<sup>163</sup> *Ibid.* at ¶ 114.

### 2.3.2.2. *Integration in the Model by Arbitrators*

The conclusion of *TD Bank* and *Entrop* is ultimately that random drug testing and mass pre-employment screening are unjustified under anti-discrimination statutes. Both, however, allow testing for employees in safety-sensitive positions. *Entrop* specifically sets out that such testing is allowable on the basis of reasonable suspicion and as part of a post-incident or accident investigation. Once again, we see that testing is allowed under the same conditions as the initial U.S. *Railroad Regulations*. It was therefore easy for the “new” anti-discrimination reasoning governing drug testing to be integrated into the Canadian model, which itself is basically identical to the U.S. system.

This process of integration occurred rapidly in the years following *TD Bank* and *Entrop*. In *CN & CAW*,<sup>164</sup> Arbitrator Picher cites *TD Bank* at length, as well as the lower tribunal rulings in *Entrop*. Hearings in the case ended two days prior to the release of the Court of Appeal decision in *Entrop*. By the time Arbitrator Picher rendered *Imperial Oil*, the reasoning on discrimination was clearly described as a key component of the Canadian model.

## 3. Conclusions

In this chapter, I have described how the core elements of the so-called “Canadian model” of employment drug testing were transmitted from the United States. I showed how the transportation sector – and in particular the railroad industry – played an important role in this transmission. In that industry, several aspects of

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<sup>164</sup> *Supra* note 129.

the U.S. norms came to be applied in Canada despite the abandonment of a government policy initiative that sought to import them directly. Though systematic evidence is harder to come by, it appears that corporate personnel policies also brought the American norms to Canada.

I also demonstrated that from these distinct points of contact the American norms *spread*. Both the terminology and the justification in terms of safety were applied by human rights tribunals, labour arbitrators and courts in contexts where there was no direct link with the United States.

In Chapter 2, I argue that these two features – the absence of (successful) intentional efforts to import the U.S. norms by legislation or regulations and the pattern of initial contact followed by later spread – cannot be explained by the transplant and harmonization accounts of legal norm transmission. This leads me to propose an epidemiological account of legal norm transmission, which I will systematize and then test in later chapters.

## CHAPTER 2

### TOWARDS AN EPIDEMIOLOGICAL SOLUTION

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## Introduction

In Chapter 1, I gave what can be called an empirical or historical explanation of how the law governing employment drug testing in Canada came to be what it is. Such causal accounts may jar with the kinds of explanations that are typically put forward by jurists, which tend to rely on justifications mobilized within the discursive structure of the law itself.<sup>1</sup> The story of the law governing employment drug testing in Canada is just such a case of conflicting explanations; the description I set out directly contradicts the account the jurisprudence gives of itself.

There is a sense, however, in which this description of the facts of transmission is not really an explanation at all. This is because not all empirical descriptions – even causal ones – are explanations. As Peter Lipton argues, what counts as an explanation will depend, in part, on what we want to know; that is, on our *interest*.

We may explain an event by giving some information about its causal history, but causal histories are long and wide, and most causal information does not provide a good explanation. The big bang is part of the causal history of every event, but explains only a few. The spark and the oxygen are both part of the causal history that led up to the fire, but only one of them explains it. So what makes one piece of information about the causal history of an event explanatory and another not? *The short answer is that the cause that explains depends on our interests.*<sup>2</sup>

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<sup>1</sup> Many jurists appear to take seriously the quote (mis)attributed to Bismarck that laws are like sausages and the less we know about how they are made the better off we are. Exceptions, of course, abound. See e.g. Michelle Giroux, Guy Rocher & Andr ee Lajoie, “L’ mergence de la *Loi sur les services de sant  et des services sociaux* de 1991 : une chronologie des  v nements” (1999) 33 R.J.T. 153.

<sup>2</sup> Peter Lipton, “Contrastive Explanation” in Dudley Knowles, ed., *Explanation and its Limits* (Cambridge: Cambridge University Press, 1990) 247 at 249 [references omitted; emphasis added].

Another way of saying this is that explaining is the act of answering “why-questions”.<sup>3</sup> We want our account not only to tell us *what* happened (American norms came to Canada) but *why* it happened. This doesn’t mean that we need to postulate the existence of universal laws instantiated by the particular events under study as in a full-blown deductive nomological view of explanation.<sup>4</sup> It is far from clear that this is even possible in the social sciences.<sup>5</sup> But something more than just a description is needed. A more satisfying explanation would give a general account of the ways in which legal norms are transmitted across jurisdictions and situate the particular case of employment drug testing norms within that account. That is the objective of this chapter.

In the first sections, I briefly describe the two most common accounts of legal norm transmission – legal transplant and legal harmonization – and then argue that they cannot adequately explain the phenomenon of the transmission and spread of employment drug testing norms that I described in Chapter 1. Instead, I propose that a viral model better explains this particular case. I then review the literature on viral spread of social phenomena, with particular emphasis on the spread of legal norms. This leads me to clarify some methodological issues, distinguishing between a metaphor and a model.

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<sup>3</sup> See *e.g.* Peter Achinstein, “What Is an Explanation?” (1977) 14:1 *American Philosophical Quarterly* 1; Raimo Tuomela, “Explaining Explaining” (1980) 15 *Erkenntnis* 211.

<sup>4</sup> Also called the “covering law model”. See the classic paper by Carl G. Hempel and Paul Oppenheim. “Studies in the Logic of Explanation” (1948) 15 *Philosophy of Science* 135.

<sup>5</sup> See *e.g.* David-Hillel Ruben, “Singular Explanation and the Social Sciences” in Knowles, *supra* note 2, 95.

## 1. Situating Norm Transmission in Legal Theory

### 1.1. *What is Norm Transmission?*

So far, I have been referring to norm transmission as though it were an obvious and unproblematic concept. Before delving further into theories that seek to explain it, I will briefly flesh out what exactly it is that I mean by “norm transmission”. To transmit – from the Latin *transmittere* – is to cause something to move from one place to another.<sup>6</sup> Thus we can say that a legal norm has been transmitted when it has moved.

There is nothing magical about the term “transmission”. I could have just as easily chosen to discuss norm “migration” or “circulation” (and indeed I have used this terminology in the past).<sup>7</sup> Each of these terms is essentially metaphorical (a theme to which we will return below) and brings with it a series of connotations. I have chosen “transmission” simply because it appears to me to be the least loaded.<sup>8</sup> For now, suffice to say that the phenomenon that interests me – and judging by the scholarship, that interests other jurists – is the movement of legal norms from one jurisdiction to another. In its most basic form, this refers to cases where

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<sup>6</sup> *The New Oxford American Dictionary*, 2<sup>nd</sup> ed., s.v. “transmit”. From *trans-* “across” + *mittere* “send”.

<sup>7</sup> Finn Makela, “The Migration of Drug Testing Norms From the United States to Canada: A Genealogy” (Paper presented to the Joint Annual Meeting of the Law and Society Association and the Canadian Law and Society Association, Montreal, May 31, 2008) [unpublished]; Finn Makela, “La circulation non intentionnelle des normes juridiques : une approche épidémiologique” (Paper presented to the Annual Congress of the Québec Society of Comparative Law, Montreal, April 24, 2009) [unpublished].

<sup>8</sup> One drawback is that “transmit” is transitive (*X* transmitted the *Y* to *Z*) whereas “migrate” is generally not (*X* migrated to *Z*). Transmission is, as it were, more ontologically prodigal.

the legal system of some jurisdiction  $X$  had feature  $\varphi$  at some time  $t$ , while jurisdiction  $Y$  didn't have  $\varphi$  at  $t$ , and finally  $Y$  "acquired"  $\varphi$  from  $X$  at some time  $t+n$ .

Now, it should immediately be admitted that this seemingly simple definition of the scope of my inquiry relies upon a series of presuppositions concerning both the nature of the law and of legal phenomena. First, it presupposes that the features of a legal system are the kinds of things amenable to empirical study and that they may be usefully analysed *qua* social facts. I argue in the next subsection that this rules out legal positivism as the organizing theoretical framework of an account of legal norm transmission. Second, the way I have formulated the problem of norm transmission presupposes what may be characterized as monist conception of jurisdictions and their boundaries. I will therefore respond to potential criticisms by legal pluralists.

### 1.2. *The Inadequacy of Legal Positivism*

A positivist theoretical approach to law cannot provide an adequate analysis of legal norm transmission, though varieties of positivism may have *something* to say about the phenomenon. In particular, some positivist analysis may contribute to understanding how a legal system might articulate its criteria for welcoming or rejecting a norm that is a candidate for transmission. What positivism cannot provide, however, is an explanation for how and why the transmission process unfolded as it did, nor make predictions of this nature regarding future transmission. At best, positivists could claim "norm  $X$  was accepted or rejected for reasons  $a$ ,  $b$ ,

*c...*” or “norms sharing characteristics *X, Y, Z...* will be accepted or rejected in the future for reasons *α, β, γ...*”

There are, of course, almost as many legal positivisms as there are legal positivists.<sup>9</sup> As H.L.A. Hart remarked (in what is arguably the most widely cited footnote in all of jurisprudence<sup>10</sup>) the term “positivism” is often used indiscriminately to describe a variety of related, but nevertheless distinct, doctrines. Hart provides the following non-exhaustive list of contentions that can be (and have been) designated as positivist:<sup>11</sup>

- (1) [T]he contention that laws are commands of human beings,
- (2) the contention that there is no necessary connection between law and morals or law as it is and law as it should be,
- (3) the contention that the analysis (or study of the meaning) of legal concepts is (a) worth pursuing and (b) to be distinguished from historical inquiries into the causes or origins of laws, from sociological inquiries into the relation of law and other social phenomena, and from the criticism or appraisal of law, whether in terms of morals, social aims, “functions” or otherwise,

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<sup>9</sup> In the words of one commentator “[l]egal positivism, like breakfast cereal, seems to come in a wide variety of brands, with modest variations in the ingredients”, Brian Bix, “Patrolling the Boundaries: Inclusive Legal Positivism and the Nature of Jurisprudential Debate” (1999) 12 *Can. J. L. & Jurisprudence* 17 at 17.

<sup>10</sup> See *e.g.* Uberto Scarpelli, *Qu'est-ce que le positivisme juridique?* trans. C. Clavreul (Paris: Bruylant/L.G.D.J., 1996) at 14.

<sup>11</sup> H.L.A. Hart, “Positivism and the Separation of Law and Morals” (1958) 71:4 *Harvard Law Rev.* 594 at note 25 [601-602, intertextual references omitted].

(4) the contention that a legal system is a “closed logical system” in which correct legal decisions can be deduced by logical means from predetermined legal rules without reference to social aims, policies, moral standards, and

(5) the contention that moral judgements cannot be established or defended, as statements of facts can, by rational argument, evidence, or proof...

It is readily apparent that though some of these contentions are *compatible* with non-positivist explanations of legal norm transmission, none of them can *provide* an explanation.

Holders of (1), such as Austin,<sup>12</sup> might argue that a legal norm has been transmitted when (and only when) the sovereign of the jurisdiction to where it has transmitted has made it into a command, either explicitly (“I hereby proclaim that norm *X* is now part of our legal system”)<sup>13</sup> or implicitly (by not issuing edicts that forbid *X*’s application). But this does not supply an explanation of the transmission. In the first case, the question of how norms are transmitted is essentially begged, since it provides no insight into how the sovereign got the idea to edict the norm originating in another jurisdiction. Furthermore, this case is particularly unhelpful for the specific subset of norm transmission that I am interested in, which I stipulated occurs in the absence of legislative intervention. Indeed, Chapter 1 clearly illustrates that – to the extent that Canada’s parliament is an Austin-

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<sup>12</sup> John Austin, *The Province of Jurisprudence Determined* (London: John Murray, 1861).

<sup>13</sup> This is not a mere hypothetical and there is no shortage of examples of edicts of exactly this kind. Consider, for instance the *The Quebec Act, 1774*, 14 George III, c. 83 (U.K.) which ratified two different legal transmissions to what is now Quebec: the French law in civil matters (which came with the original settlers to New France) and the English common law in criminal and public law matters (which came with the British conquest).

ian sovereign – the sovereign specifically *declined* to edict the norms in question. In the second case (that is, the sovereign who tolerates a newly transmitted norm and thus implicitly puts it in his catalogue of “commands”) doesn’t get us any closer to an explanation. All it tells us is what happens at the final step of the norm’s transmission, not how or why it was transmitted. In both of these cases, positivism can only provide account of the sovereign’s ratification of the very process for which we want an explanation.

Proponents of (2) may have a lot to say about norm transmission, or nothing at all to say about it, but their adherence to the position that law and morality are separate can only constrain the field of possible explanations for norm transmission; they cannot *provide* an explanation. In other words, there may be explanations of legal norm transmission that do not violate the tenets of positivism (as it is construed by these versions of it), but this in no way enhances our understanding of the phenomenon.

Contention (3) explicitly denies that positivism is concerned with the very kind of explanation that we are looking for, *i.e.* historical inquiry into the origins of laws and sociological inquiry into the relationship between law and other social phenomena. This kind of positivist might be quite open to such explanations, find them valuable sources of understanding about a particular legal system, *etc.* But she would deny that positivism as a theoretical framework is of any use to this explanation. On the contrary, she merely asserts that a meaningful analysis of legal concepts that doesn’t appeal to such explanations is also worth pursuing.

The position set out in (4), which is the (usually implicit) underlying premise of the greater part of published doctrinal legal commentary, suffers the same defect of question begging as (1). This doesn't mean a positivist of this persuasion would have nothing to say about norm transmission. Certainly one could take an entirely "internalist" perspective of the law of a particular jurisdiction and have something to say about the acceptance of new norms. For example, an exhaustive review of the applicable legislation and jurisprudence of a given legal system might generate a rule of recognition<sup>14</sup> that specifies under what conditions a newly transmitted legal norm is to be considered part of the legal system in question.<sup>15</sup> Again, however, this tells us nothing about transmission *per se*; it is simply a special case of the general proposition that an internalist perspective can produce a coherent account of the conditions under which norms accede to the status of "legal rules."

Finally, the ethical non-cognitivism of (5) is simply irrelevant to the kinds of questions to which I am seeking answers. A theory of norm transmission needn't entail any commitment either way on the fact/value distinction. A moral realist explanation of legal norm transmission may be *conceivable*, but all that this entails is

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<sup>14</sup> On the notion of a "rule of recognition" see H.L.A. Hart, *The Concept of Law*, 2<sup>nd</sup> ed. (Oxford: Oxford University Press/Clarendon, 1994 [1961]) at 100-124.

<sup>15</sup> Among the many examples of such an exercise, consider *Singh v. Minister of Employment and Immigration*, [1985] 1 S.C.R. 177, in which the Supreme Court of Canada noted that Parliament had imported the definition of "refugee" set out in chap. 1, art. 1, paragraph A(2) of the *United Nations Convention Relating to the Status of Refugees*, 28 July 1951, 189 U.N.T.S. 150 into Canadian law through the operation of s. 2(1) of the *Immigration Act*, 1976, 1976-77 (Can).



that – as with (2) – the positivist committed to (5) would rule that out as a good explanation. It would not bring us any closer to understanding the phenomenon.

Hart's typology is non-exhaustive and indeed there are other descriptions and definitions of legal positivism.<sup>16</sup> I have chosen Hart as representative of positivism because his view is the most "open", by which I mean it is less *prescriptive* than other positivist views. That positivists should have a prescriptive approach to jurisprudence may seem initially counterintuitive, given their emphasis on the importance of separating normative claims of the law from factual claims about the law. Yet, while positivism's conceptual analysis appears simply to provide a decision procedure for sorting social phenomena into the categories "law" and "everything else", it also serves as a set of norms for setting out how law *should be* by denying juridicity to any phenomena that does not meet its criteria.<sup>17</sup> If Hart's positivism cannot provide an account of legal norm transmission, then this is *a fortiori* true of positivists who insist on more radically hermetic boundaries for the concept of law (*e.g.* Austin and Kelsen).

This section is not meant as a complete catalogue of possible positivist positions on legal norm transmission. Neither is my aim to provide a critique of any or all of the versions of legal positivism discussed (though I think there is ample room for such critique). Rather, I hope to have illustrated that whatever the ad-

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<sup>16</sup> See generally Scarpelli, *supra* note 8; Bix, *supra* note 9. See also François Chevrette and Hugo Cyr, "De quel positivisme parlez-vous?" in Louise Rolland and Pierre Noreau, *Mélanges Andrée Lajoie* (Montréal: Thémis, 2008) 33.

<sup>17</sup> On this "deep contradiction" within positivism, see Lon L. Fuller, "Positivism and Fidelity to Law – A Reply to Professor Hart" (1958) 71:4 *Harvard L. Rev.* 630. See also Ronald Dworkin, *Law's Empire* (Cambridge, Mass.: Harvard University Press, 1986), especially at 31-44.

vantages or drawbacks of legal positivism as a theory of jurisprudence, it cannot provide an adequate explanation of the phenomenon of legal norm transmission. This is in part because legal positivism is engaged in the project of prescriptively defining law rather than of theorizing the conditions that make law both possible and adaptable as a social product. Thus, positivism – and in particular the effects that the *de facto* adoption of positivism by legal professionals and scholars has on the self-understanding of legal systems – may provide *data* that is an important part of accounting for legal norm transmission, but it cannot provide a *theory* that explains it.

### 1.3. *Legal Pluralism and Norm Transmission*

Recall that my provisional definition of legal norm transmission is the movement of a norm from one jurisdiction to another, with “movement” being cashed out in terms of the sequential appearance of some feature of the legal system in each of the jurisdictions. I admitted that this leaves me open to a charge of presupposing a kind of monism regarding jurisdictions and their boundaries. In this subsection, I will set out what I mean by “monism” in contrast to the theoretical approach of legal pluralism and respond to some potential critiques by legal pluralists.

Another reason for discussing legal pluralism here is that the study of norm transmission was central to early pluralist thought, though the contemporary legal pluralist literature has had little to say about the kind of norm transmission in which I am interested. This is in part because of the research programme that

contemporary legal pluralism has adopted, which is in turn a consequence of its development as a theoretical position.

Legal pluralism can be described as a family of theoretical approaches to legal phenomena that challenge the view that juridicity is uniquely attributable to norms that are explicitly adopted by institutions of the political state and that are exclusively and universally applicable in a particular geographic area.<sup>18</sup> In contrast, pluralists argue that there are often more than one legal order operating in a given territory, that many of these legal orders are partially or completely independent of the state, and that their normativity need not stem from explicit and institutionalized rule-making.

Until the 1970s, legal pluralism was primarily concerned with the coexistence of multiple legal systems resulting from colonization; this perspective has been called “classical” legal pluralism.<sup>19</sup> Its roots – which go back to ethnographic studies of customary law in colonized societies – can be summarized as follows:

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<sup>18</sup> That is, pluralism challenges the ideology of modernity, the central tenets of which are centralism (the law is uniquely attached to the political state), monism (there is a one-to-one ratio between legal orders and geographical areas), and positivism (the law is always the product of explicit institutional rule-making). See *e.g.* Roderick A. Macdonald, “L’hypothèse du pluralisme juridique dans les sociétés démocratiques avancées” (2002-2003) 33 R.D.U.S. 133 [“L’hypothèse du pluralisme juridique”]. See also John Griffiths, “What is Legal Pluralism?” (1986) 24 J. Legal Pluralism & Unofficial Law 1 at 3 (calling centralism the ideology according to which “...law is and should be the law of the state, uniform for all persons, exclusive of all other law, and administered by a single set of state institutions”).

<sup>19</sup> Sally E. Merry “Legal Pluralism” (1988) 22 Law & Society Rev. 869 at 872 and *ff.* See also M. B. Hooker, *Legal Pluralism: An Introduction to Colonial and Neo-Colonial Laws* (Oxford: Oxford University Press, 1975) at 2 (defining legal pluralism as the existence of “multiple systems of legal obligation... within the confines of the state”).

Research on legal pluralism began in the study of colonial societies in which an imperialist nation, equipped with a centralized and codified legal system, imposed this system on societies with far different legal systems, often unwritten and lacking formal structures for judging and punishing.<sup>20</sup>

In one sense, then, legal pluralism has always been concerned with norm transmission. But note that the questions of *how* and *why* legal norms were transmitted are relatively uninteresting from this perspective. They are uninteresting because the answers are obvious: the norms were intentionally imposed by the colonizing power as part of the project of colonization. This is a paradigm case of legal *transplant*, an account of legal norm transmission to which we will return below. The interesting questions raised in classical legal pluralism lie not in the *process* of transmission, but in its *consequences*. Among these questions are the nature and extent of the interactions between the coexisting legal systems, their relative normative force among the inhabitants of the colonized territory, their real and imagined jurisdictions over various kinds of social conflict, *etc.* All of these questions lead to the very difficult problem of theorizing what exactly law *is* and what exactly constitutes a legal system or legal order.

“Contemporary” legal pluralism can be characterized as adding both breadth and depth to the classical legal pluralist project. Legal pluralists *broadened* the scope of their research by applying the framework of multiple coexisting legal orders to industrialized societies. This extension of the “social scientific” aspect of legal pluralism led to the “discovery” of multiple legal orders of varying formality

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<sup>20</sup> Hooker, *ibid.* at 874.

coexisting within industrial societies.<sup>21</sup> With this empirical approach<sup>22</sup> came a re-discovery of a number of pluralist hypotheses in the literature on the sociology of law.<sup>23</sup> Pluralists *deepened* their analysis in that they began to theorize pluralism as a general account of legal phenomena. Rather than take state law as a paradigm case to which other normative orders can be compared, many pluralists now hypothesize that state law is just one instance among many differing forms of social ordering, none of which has an inherent monopoly on the concept of law.

As with classical legal pluralism, contemporary legal pluralism finds itself in the obverse of the positivist quandary. The positivist posits a prescriptive definition of law and suffers the consequence of being unable to account for law as a social product. The pluralist attends to the social production of norms, but is immediately faced with the critique that she has so expanded the category “law” that it is meaningless as a descriptor of a particular human institution.<sup>24</sup>

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<sup>21</sup> Merry, *supra* note 19. See also Jean-Guy Belley, “Law as *Terra Incognita*: Constructing Legal Pluralism” (1997) 12 C.J.L.S. 17 (symbolically locating this shift by the 1981 renaming of the Journal “African Law Studies” to “Journal of Legal Pluralism”). For an alternative, more critical, history of legal pluralism, see Martha-Marie Kleinhans & Roderick Macdonald’s aptly titled “What is Critical Legal Pluralism?” (1997) 12 C.J.L.S. 25 at 29-37. For an example of this turn from colonized other to industrial self, see Harry W. Arthurs, *Without the Law: Administrative Justice and Legal Pluralism in Mid 19th-Century England* (Toronto; University of Toronto Press, 1985). On the term “social scientific legal pluralism” see Griffiths, *supra* note 18. For a critique of social scientific legal pluralism see Brian Z. Tamanaha, “The Folly of the ‘Social-Scientific Concept of Legal Pluralism’” (1993) 20 J.L. & Soc’y 192.

<sup>22</sup> Griffiths, *supra* note 18 at 4, claims “Legal pluralism is the fact. Legal centralism [the conception of law as a single, unified and exclusive hierarchical normative ordering] is a myth, an ideal, a claim, an illusion.”

<sup>23</sup> See *e.g.* Guy Rocher, “Pour une sociologie des ordres juridiques” (1988) 29 Cahiers de Droit 91 (proposing an empirical sociology of legal orders based on the ideas of Max Weber and Santi Romano).

<sup>24</sup> On the pluralist problem of defining law and an attempted solution, see *e.g.* Brian Z. Tamanaha, “A Non-Essentialist Version of Legal Pluralism” (2000) 27 J. of Law & Soc’y 296. For an analysis of how this critique is mobilized and a cogent deconstruction, see Kleinhans & Macdonald, *supra* note 21 and Roderick A. Macdonald, “Metaphors of Multiplicity: Civil Society, Regimes and Legal Pluralism” (1998) 15 Ariz. J. Int’l & Comp. L. 69.

This story of the development of legal pluralist thought may go to explaining why so little attention has been paid by pluralists to the kind of norm transmission that I am interested in explaining. As the case of the coexistence of informal law and state law resulting from colonial legal transplant was generalized to cover all forms of coexisting normative orders, the phenomenon of transmission lost its centrality. As every society is taken to always already have had multiple normative orders, the question of *where* these orders came from is not directly relevant. Or rather, it is no more relevant than the other tasks for the (contemporary) legal pluralist of identifying various orders, interrogating their interrelationship, explaining their normative force, and ultimately advancing understanding of legal phenomena in general.

In contrast to positivism then, legal pluralism is not a theoretical framework that *a priori* excludes norm transmission as an object of study. Indeed, legal pluralism provides a theoretical framework that is compatible with my research programme, despite the relative absence of legal pluralist scholarship on “unintentional” norm transmission from one state law jurisdiction to another. For instance, it is possible that the vectors of transmission of norms may operate largely outside of state law prior to their eventual recognition by state institutions such as courts. Thus, one of the things that needs explaining is the way in which state law and other legal orders interact; this is a central research problem for legal pluralists.

However, legal pluralism also provides a standpoint from which to criticize my project. To say that two countries have different legal systems (which is a pre-

condition to posing the problem of how elements of one get incorporated into the other) is to make a claim about the primacy of jurisdiction as conceived of by the Westphalian nation state. Pluralists might argue that all societies have multiple legal systems, some of which are entirely within one or another state and some of which traverse their frontiers with little or no impact caused by state borders. Thus, a research programme that focuses on the transmission of norms between legal systems conceived of as monolithic and hermetic entities runs the risk of mischaracterizing the phenomenon, which might be better explained with reference to non-state legal orders. For instance, a legal pluralist could argue that the “law of railways” is a legal system spanning both the Canada and the United States and that it is comprised not only (or even primarily) of the laws and regulations adopted by legislators on both sides of the border, but also collective agreements negotiated between the various railways and their unions, employment policies, safety practices, implicit co-ordination between various industry actors, shared historical meanings, attitudes and values, *etc.* On this view, the legal relationships between a railway and its employees in Alabama may be more similar to the relationship between railways and their employees in the Yukon than it is to the employment relationship in other workplaces in Alabama. The pluralist might then claim that the *real* question of norm transmission is how drug testing norms were transmitted from the “law of railways” to other legal orders, rather than how they were transmitted from the United States to Canada. Furthermore, the pluralist could claim that restricting the analysis to state law contributes to the ideology

of modernity by rendering invisible legal orders that do not confirm the hypotheses of centralism, monism, and positivism.<sup>25</sup>

I have several interrelated answers to this criticism. First, though I accept that there are multiple and overlapping legal orders that could be said to govern the practice of drug testing in employment, the transmission problem is particularly striking in the case of the jurisdictional transmission from the United States to Canada. This is not to deny that there may be other ways to carve up jurisdictions and observe transmission between them. Thus I readily admit to choosing as my objects of study legal orders that conform to a rather orthodox conception of legal systems but this does *not* entail that I deny either the existence nor the importance of other legal orders.

Now, when I say that the transmission problem is particularly striking in the case of the jurisdictional transmission between states, I am making a claim based on the available evidence set out in Chapter 1. This is because – unlike most other legal orders – the norms of state legal systems are systematically published and widely available. My second response to the pluralist criticism is thus that my choice of object of study is not the result of any particular theoretical preconceptions about the nature of legal systems; it is based on the availability of data. I come back to this question of data availability in Chapter 3, where I discuss it in some detail.

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<sup>25</sup> For a discussion of the commitments of legal theory in terms of hypotheses, see Kleinhans & Macdonald, *ibid.* and Macdonald, “L’hypothèse du pluralisme juridique”, *supra* note 18.



Finally, my project is to provide an explanation of the phenomenon that is an improvement over standard accounts of legal norm transmission, notably transplant and harmonization theories. As we shall see in the following sections, *these* theories generally attempt to explain the transmission of norms between state legal systems. Thus, if my approach is to be compared to them, it behooves me to begin by applying it to the same kind of phenomena.

## 2. Existing Accounts of Legal Norm Transmission

There is a substantial literature on legal norm transmission. Though a variety of metaphors to account for norm transmission have been proposed,<sup>26</sup> the two dominant conceptions are those of legal transplant<sup>27</sup> and legal harmonization<sup>28</sup>. These two conceptions generally share a focus on the question of “fit” between transmit-

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<sup>26</sup> See, *e.g.*, Gunther Teubner, “Legal Irritants: Good Faith in British Law or How Unifying Law Ends up in New Divergences” (1998) *Mod. L. Rev.* 11 (arguing that transplantation is a misleading metaphor and the notion of irritants, which provoke differentiated responses from host legal systems); Martha J. Bailey, “Migration of the Same-Sex Family” (2004) *Queen’s Univ. Law & Economics Paper No. 2004-05* (applying the metaphor of non-native species introduced or moved by human activity to a location in which they do not naturally occur). See also, Sujit Choudhry, “Migration as a New Metaphor in Comparative Constitutional Law” in Sujit Choudhry, *ed.* *The Migration of Constitutional Ideas* (NY: Cambridge University Press, 2006).

<sup>27</sup> See especially Alan Watson, *Legal Transplants: An Approach to Comparative Law*, 2<sup>nd</sup> ed. (Athens, Georg.: University of Georgia Press, 1993) [Watson, *Legal Transplants*] (arguing that borrowing from other jurisdictions is the main source of legal change). See also Pierre Legrand, “The Impossibility of ‘Legal Transplants’” (1997) 4 *M. J. E. C. L.* 111 (arguing that transplant is impossible because of the difference in interpretation and outcome that borrowed rules have in new jurisdictions); Alan Watson, “Legal Transplants and European Private Law” (2000) 4.4 *E.J.L.C.*, online: <<http://www.ejcl.org/ejcl/44/44-2.html>> (responding to Legrand).

<sup>28</sup> See, *e.g.*, Walter J. Kamba, “Comparative Law: A Theoretical Framework” (1974) 23 *I.C.L.Q.* 485 at 501-504 (distinguishing unification and harmonization and situating harmonization in the comparative law enterprise); Arthur Rosset, “Unification, Harmonization, Restatement, Codification, and Reform in International Commercial Law (1992) 40 *Am. J. Comp. L.* 683 (arguing that piecemeal and *ad hoc* harmonization is more important to bringing “world law” together than “grand schemes” of unification by codification). See also Robert Leckey, “Harmonizing Family Law’s Identities” 28 (2002) *Queen’s L.J.* 221 (expanding the notion of harmonization to include harmonization between state law and other non-state normativities).

ted norms and the host jurisdiction. Typical questions include how similar the outcomes generated by the application of a transplanted norm are to the outcomes it generates in the original jurisdiction,<sup>29</sup> and what its relationship is to the other norms of the receiving jurisdiction.

Furthermore, the phenomenon of legal norm transmission has recently gained in importance in the academic literature.<sup>30</sup> There are several reasons why this trend is likely to continue. First, the facts of economic globalization, including the intensification of international trade and the increasing transnationalization of production, have led to competition between states to provide legal regimes that are conducive to investment.<sup>31</sup> For a variety of reasons, such competition appears to result in the convergence – by various mechanisms, including transmission – of

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<sup>29</sup> See *e.g.*, Teubner, *supra* note 26.

<sup>30</sup> For recent works, see *e.g.*, Sujit Choudhry, *ed.*, *The Migration of Constitutional Ideas* (NY: Cambridge University Press, 2006); Judith Resnik, “Law’s Migration: American Exceptionalism, Silent Dialogues, and Federalism’s Multiple Ports of Entry” (2006) 30 *Yale L.J.* 1564.

<sup>31</sup> This is not a new idea. Indeed, from the very beginning, proponents of free trade believed that legal regulation was one area in which states could compete for comparative advantage. See, *e.g.* Andrea Maneschi, *Comparative Advantage in International Trade: A Historical Perspective* (Cheltenham, UK: Edward Elgar, 1998). The theory of international regulatory competition has also been mobilized as a *critique* of the arguments for free trade, notably using the concept of a “race to the bottom”, see *e.g.* Joel R. Paul, “Free Trade, Regulatory Competition and the Autonomous Market Fallacy” (1994) 1 *Colum. J. Eur. L.* 29. On the relationship between regulatory competition and harmonization, see Alan O. Sykes, “Regulatory Competition or Regulatory Harmonisation? A Silly Question?” (2000) *Journal of Int. Economic Law* 257; Simon F. Deakin, “Regulatory Competition Versus Harmonisation in European Company Law” (2000) Centre for Business Research, University of Cambridge, Working Paper No. 352.

legal rules across jurisdictions.<sup>32</sup> Secondly, the rising number and importance of supranational law regimes – not the least of which the European Union – is likely to further sustain interest in questions of legal norm transmission.<sup>33</sup> A third reason why legal academics are likely to continue to take an interest in legal norm transmission is the increasing acceptance of legal pluralism; a theoretical framework to which transmission has historically been central.<sup>34</sup>

However, the kind of “non-intentional” transmission that I am interested in has received little scholarly attention.<sup>35</sup> As I argue in the remainder of this section, both transplants and harmonization efforts are generally understood to be explicit projects undertaken by actors within one or more of the legal systems involved. For instance, the transplant of Roman law principles to Scotland can be

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<sup>32</sup> Two reasons for regulatory competition to result in convergence readily present themselves. The first is that competition may lead to convergence by favouring the most efficient rules (or rule-sets), which tend to resemble one another. The contemporary roots of this hypothesis can be found in the works of Ronald Coase (*e.g.*, “The Problem of Social Cost” (1960) 3:1 *Journal of Law and Economics*, 1) and Richard Posner (*e.g.*, *Economic Analysis of Law*, 7th ed. (New York: Aspen Law & Business, 2007)). It is a key thesis in Roberta Romano, *The Genius of American Corporate Law* (Washington: American Enterprise Institute, 1993). The second reason why regulatory competition can lead to convergence is that relatively harmonized rules can reduce transaction costs and there is thus an incentive for states to harmonize in order to attract investment; see, *e.g.*, Nuna Garupo & Anthony Ogus, “A Strategic Interpretation of Legal Transplants” (2006) 35 *Journal of Legal Studies* 339 (arguing for an economic explanation of harmonization and unification efforts as attempts by states to “free-ride” on the efforts of other jurisdictions).

<sup>33</sup> See, *e.g.* Neil Walker, “The Migration of Constitutional Ideas and the Migration of the Constitutional Idea: The Case of the EU” in Choudhry, *The Migration of Constitutional Ideas*, *supra* note 30.

<sup>34</sup> For an example of (moderately) pluralist scholarship on legal migration, see Judith Resnik, “Law’s Migration: American Exceptionalism, Silent Dialogues, and Federalism’s Multiple Ports of Entry” (2006) 115 *Yale L. J.* 1564 (arguing that rights can migrate across borders through the actions of mayors, city councils, *etc.*, and not only through the Federal or State legislatures). For a pluralist critique of the “international norm entrepreneurs” who try to effect law reform through harmonization and transplant initiatives, see Roderick Macdonald, “Unitary Law Re-form, Pluralistic Law Re-Substance” (2007) 67 *Louisiana L. Rev.* 1113.

<sup>35</sup> But see Martha J. Bailey, “Migration of the Same-Sex Family” (2004) Queen's Univ. Law & Economics Paper No. 2004-05.

traced to a few seventeenth century legal scholars who engaged in a concerted effort to ground Scots civil law – an effort that was motivated, in part, by a nationalist reaction to English law.<sup>36</sup> Harmonization and unification efforts have largely been undertaken by states themselves (*e.g.*, UNIDROIT<sup>37</sup>) or through organizations of which states are members (*e.g.*, UNCITRAL,<sup>38</sup> NCCUSL<sup>39</sup>), though often with the active participation of legal scholars and commercial interests.<sup>40</sup>

### 2.1. *Transplant*

The possibility of legal transplants, that is “...the moving of a rule or system of law from one country to another, or from one people to another...”<sup>41</sup> is the subject of long standing debate between legal scholars. The various positions in this debate can be set along a continuum between “culturalists” on one end and “transferists” on the other.<sup>42</sup> The former, characterized by Montesquieu, Savigny, and

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<sup>36</sup> Watson, *Legal Transplants*, *supra* note 27 at 44-56. Note, however, that Watson also indicates that “sheer chance” plays a role in legal transplants.

<sup>37</sup> See *Statute of the International Institute for the Unification of Private Law (UNIDROIT)*, 15 March 1940, A.T.S. 1973 No. 10 (entered into force 21 April 1940, as amended). See generally, <<http://www.unidroit.org>>.

<sup>38</sup> The United Nations Commission on International Trade Law, established by *Establishment of the United Nations Commission on International Trade Law*, GA Res, 2205 (XXI), UN GAOR, 21<sup>st</sup> Sess., Supp. No. 16, UN Doc. A/6316 (1966) 99. See generally, <<http://www.uncitral.org>>.

<sup>39</sup> The National Conference of Commissioners on Uniform State Laws is one of the two organizations (along with the American Law Institute) responsible for the United States Uniform Commercial Code. Technically, it is not the states who are members, but the commissioners who are appointed by each state. See generally, <<http://www.nccusl.org>>.

<sup>40</sup> Paul Dubinsky, “Human Rights Law Meets Private Law Harmonization: The Coming Conflict” (2005) 30 *Yale J. of Int’l Law* 211 at 218-222.

<sup>41</sup> Watson, *Legal Transplants*, *supra* note 27 at 21.

<sup>42</sup> For brief histories of this debate, see Richard G. Small “Towards a Theory of Contextual Transplants” (2005) 19 *Emory Int’l L. Rev.* 1431. See also Teubner, *supra* note 26.

more recently, Pierre Legrand, see the law as a particular expression of a national culture.<sup>43</sup> Since an entire national culture cannot be transplanted along with a legal rule, legal transplants are impossible.<sup>44</sup> On the other end of the continuum we find, among others, Roscoe Pound<sup>45</sup> and Alan Watson, in his immensely influential (and controversial) book *Legal Transplants*.<sup>46</sup> For transferists, legal transplant is not only possible, it is *the* primary source of change in legal systems.<sup>47</sup>

Ultimately, the disagreement between culturalists and transferists may be less about transplants *per se* than about the ontology of legal rules in general.<sup>48</sup> The culturalist claims that a legal rule cannot be transplanted, since it is always anchored in a *Volksgeist* or *esprit national* and thus its purported insertion into another national culture would so transform it that it would not count as “the same rule”. The transferist, on the other hand, will readily admit that a rule may change radically once transplanted:

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<sup>43</sup> The standard references to Montesquieu and Savigny are, respectively, *De l'Esprit des lois* I, 3 (1748), and *Vom Beruf unsrer Zeit für Gesetzgebung und Rechtswissenschaft* (Heidelberg, 1814), Ch. 1, though they are routinely invoked without citation on this point.

<sup>44</sup> Legrand, *supra* note 27.

<sup>45</sup> Who stated that the “[h]istory of a system of law is largely a history of borrowings of legal materials from other legal systems...” in Roscoe Pound, *The Formative Era of American Law* (Boston: Little & Brown, 1938) at 94. Pound is quoted without citation by Alan Watson in *Legal Transplants*, *supra* note 27 at 22.

<sup>46</sup> Watson, *Legal Transplants*, *supra* note 27.

<sup>47</sup> *Ibid.* at 95.

<sup>48</sup> Structurally, this debate is analogous to the ship of Theseus paradox described by Plutarch. The ship in question had its planks replaced one by one over time until, eventually, no planks from the original ship remained, leaving Plutarch to note that some philosophers claimed it was the same ship, whereas others said it was a different ship altogether. See Plutarch, *Plutarch's Lives*, trans. J. Langshorne and W. Langshorne, (Philadelphia: Crissy, 1834) vol. 1 at 43.

A successful legal transplant – like that of a human organ – will grow in its new body, and become part of that body just as the rule or institution would have continued to develop in its parent system. Subsequent development in the host system should not be confused with rejection.<sup>49</sup>

Indeed, in extreme cases, a jurisdiction might adopt a rule that it completely misunderstands, thus applying it differently, even in exactly the opposite sense, once incorporated. The transferist would say that this rule has been transplanted,<sup>50</sup> whereas the culturalist would cite this as an evidence supporting the impossibility of transplants.

In one sense, then, my research on the transmission of drug testing norms from the United States to Canada falls under the rubric of a transferist view supporting legal transplants. I depart from traditional legal transplant scholarship, however, in two distinct ways. First, I am interested in norm transmission that has occurred absent explicit attempts – notably by legislatures – to effect a transplant. Traditional transplant scholarship is primarily interested in intentional transplant; indeed, in many accounts of transplant intention plays a necessary role. Alan Watson explains:

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<sup>49</sup> Watson, *Legal Transplants*, *supra* note 27 at 27 [emphasis added].

<sup>50</sup> See Watson's example of U.S. Supreme Court justice William Story's reliance on a misunderstanding of the Dutch theorist Ulrich Huber's *Paelectiones Iuris Civilis et Hodierni* in deciding conflict of laws cases, in *Legal Transplants*, *ibid.* at 109-10. He develops this example further in *Joseph Story and the Comity of Errors: A Case Study in Conflict of Laws* (Athens, Georg.: University of Georgia Press, 1992). Watson also cites the example of the role of constructive possession in the transfer of ownership in Scots law, where he concludes that Scots lawyers' ignorance or misunderstanding of Roman law was not fatal to its transplant, leading him to conclude that "...foreign law can be influential even when it is totally misunderstood..." *Legal Transplants*, *ibid.* at 50-51 and 99.

[F]or a legal rule or institution to come into being, to be borrowed, to be changed, or to disappear, *an official act must intervene...* Such acts may be laws enacted by the sovereign or legislature, or be the work of such subordinate lawmakers as judges, jurists or academics, which is, in its turn, acceptable to the government. Only legislation can make radical changes, because reliance on authority is an almost necessary ingredient in subordinate lawmaking...<sup>51</sup>

One important place where I diverge from Watson is in the importance that I put on the role of (what he calls) “subordinate lawmakers” as well as the scope of this term. Watson, it appears, adheres to some form of Austinian positivism, whereby the will of the sovereign or legislature – either by explicit enactment or by tacit acceptance – is the litmus test for determining whether a legal rule or institution forms part of a legal system. Although I gave several reasons to reject this view above, for present purposes the important one is that so-called subordinate lawmakers may be operating outside of the purview of the sovereign or legislature. It seems to me a strange sort of sovereignty that allows even the unintentional ignorance of the legislator to be determinative of the juridicity of a rule. Not only do I think that Watson’s “subordinate lawmakers” have more power than he attributes to them, but I would expand the scope of this category substantially. If legal pluralism has taught us anything, it is that there are many more sources of law – even of official state law – than orthodox legal scholarship usually acknowledges. In Chapter 1, I suggested that that corporate personnel policies and the human resources industry may have been as instrumental in the process as any “official”

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<sup>51</sup> Watson, *Legal Transplants*, *ibid.* at 108.

actors in the legal system. Watson does allow for this kind of borrowing, under the rubric of customary law, but hastens to add that it takes an official such as a judge or lawyer to conclude the transplant:

Even customary law may be borrowed. A rule that does not correspond to local customary behaviour may be adopted to become recognized as customary law. This often happens when judges faced with an actual case cannot discover any local customary practice and seek a solution elsewhere, or when a scholarly lawyer who wishes to write down the local customary law finds gaps in the system...<sup>52</sup>

Watson does not, however, take the next logical step in reasoning about the role of “customary law” in legal transplants. His example assumes that there is no local custom concerning the issue at hand and it is thus the judge or scholarly lawyer who does the borrowing. But there is no reason why the customary law itself could not be transmitted, for instance by travelling merchants or moving populations. If the only act required for this to constitute a successful transplant is the *ex post facto* recognition by the sovereign (or, in Hart’s terminology, the activation of whatever other mechanism is required for the receiving legal system’s “rule of recognition” to be triggered) then the whole transplant process could occur unintentionally, including the last step whereby the sovereign affixes his stamp of approval. Of course, from the sovereign’s perspective, he would not be effecting a transplant at all, since he would merely be endorsing the customary law as it is found in his jurisdiction.

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<sup>52</sup> *Ibid.* at 114.



Watson clearly *does* think that transplant is effected by various means and influenced by various factors, including “non-legal historico-political factors,”<sup>53</sup> the availability and language of books in libraries accessible by legal actors,<sup>54</sup> and “... climate, economic conditions, religious outlook... or even chance...”<sup>55</sup> He does not, however, provide a general explanation for how these conditions affect transplant. This is the second point on which I depart from traditional transplant scholarship.

Watson’s book catalogues a number of examples of legal transplants (*e.g.* the reception of Roman law in Scotland, English law in New Zealand, *etc.*). Each of these examples is convincingly described. However, the descriptions leave the impression that these are a series of *sui generis* historical accidents. For Watson, comparative law is essentially a form of legal history:

I would suggest that [comparative law] is the study of one legal system and its rules with another. The nature of any such relationship, the reasons for the similarities and the differences, is discoverable only by a study of the history of the systems or of the rules; hence in the first place, Comparative Law is Legal History concerned with the relationship between systems.<sup>56</sup>

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<sup>53</sup> *Ibid.* at 50-51

<sup>54</sup> *Ibid.* at 93

<sup>55</sup> *Ibid.* at 97

<sup>56</sup> *Ibid.* at 6. He goes on to say that comparative law is not *only* legal history, but the historical dimension is his primary focus in each of the example that he gives throughout his argument.

Insofar as Watson argues that his historical examples share common characteristics that can be generalized to explain the transplant mechanism, he limits himself to “general reflections” rather than specific testable hypotheses.

What I am proposing, on the contrary, is that another metaphor – that of the spread of a virus – is more amenable to providing a generalized explanation of the mechanism whereby legal rules move from one jurisdiction to another. In contrast to the transplant metaphor, which misleadingly calls to mind a single event perpetrated intentionally by one (or at least few) actor, norm transmission (even in the cases cited as paradigmatic examples of transplant) is often a diffuse process that occurs over time and is carried out by a distributed set of agents who may have no particular intentions to import or export a rule.

## 2.2. *Harmonization*

When applied to legal phenomena, the term “harmonization” covers a wide variety of distinguishable cases. Its root, “harmony”, often in relation to music, refers to the combination or adaptation of parts or elements to form an orderly whole.<sup>57</sup> Applied to law, we can say that harmonization is the process of adjustment or change of a set of rules or institutions to ensure their interoperability. The most drastic method of harmonization is to *unify* rule sets; that is, to replace one or more of the rule sets by another, which is uniform across jurisdictions. The E.U. is

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<sup>57</sup> *Shorter Oxford Dictionary*, 3<sup>rd</sup> ed., *s.v.* “harmony”. See also, *s.v.* “harmonize” (“to accord, agree, to form a concord”).

a paradigm case of unification attempts.<sup>58</sup> The United Nations *Convention on Contracts for the International Sale of Goods* provides another example. When applicable, the provisions of the Convention replace the private law of signatory states relating to “the formation of the contract of sale and the rights and obligations of the seller and the buyer arising from such a contract.”<sup>59</sup> Another method of realizing harmonization is adjustment, whether unilateral, bilateral, or multilateral. Thus, for instance, one jurisdiction might modify its rules to ensure that they conform to those of a particularly valued trading partner. More often, the jurisdictions involved will mutually adjust their rules, bringing them into conformity with an agreed set of principles or a model law.<sup>60</sup>

The above description of forms and methods of harmonization is by no means exhaustive.<sup>61</sup> What accounts of harmonization generally share, however, is the assumption that the convergence of rules is an outcome that is desired by identifiable actors who set out to effect it. In many cases, the actors are states or sub-states (*e.g.* Canadian provinces or American states) who either legislate or use treaty signing powers to achieve harmonized rules, though there are many other players

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<sup>58</sup> Konrad Osajda, “The Experiences, Methods, Objectives and Perspectives of Unification of Private Law in the European Union” (Working Paper, April 18, 2006), online: <<http://ssrn.com/abstract=897403>> . Note that E.U. directives (as opposed to E.U. regulations) can be seen as an example of harmonization (thank you to Jeremy Webber for this point).

<sup>59</sup> Apr. 10, 1980, U.N. Doc. A/CONF.97/18 (1980), reprinted in 19 I.L.M. 668 (1980), art. 4.

<sup>60</sup> The U.S. Uniform Commercial Code is an example of the model law approach. UNIDROIT uses unification, shared principles, and model laws, depending on the area of law.

<sup>61</sup> For broader (but not themselves exhaustive) typologies, see Rosset, *supra* note 28 and Dubinsky, *supra* note 40. See also Innocent Fetze Kamdem, “Harmonisation, unification et uniformisation. Playdoyer pour un discours affiné sur les moyens d’intégration juridique” (2009) 43 R.J.T. 605. For a more critical perspective, see Macdonald, “Unitary Law Re-form, Pluralistic Law Re-Substance”, *supra* note 34.

on the harmonization field, including independent or quasi-independent advisory bodies<sup>62</sup> and academic research groups.<sup>63</sup>

Another shared feature of accounts of harmonization is their general lack of theorization of the phenomenon. This is unsurprising: if we take harmonization to be the intentional work of identifiable actors, then there is little need to theorize a mechanism that explains why harmonization occurs. It occurs because people set out to make it happen and much of the intellectual work will involve cataloguing successes and failures. To the extent that this raises theoretical issues, they tend to centre around the questions of why some groups or institutions are successful in their attempts to harmonize while others aren't. There are, of course exceptions to this characterization of harmonization scholarship,<sup>64</sup> among which perhaps the most notable are "law and economics" type analyses that attempt to explain the harmonization of rules through market or market-like mechanisms.<sup>65</sup>

This overview of harmonization accounts is necessarily perfunctory. I have reduced, maybe unfairly, a large and diverse body of scholarship to what I take to be a single shared blind spot. But my purpose is not to provide an exhaustive description of the various mechanisms of harmonization and their theoretical critics

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<sup>62</sup> *E.g.* the Hague Conference on Private International Law and the American Law Institute. See generally Dubinsky, *supra* note 40.

<sup>63</sup> *E.g.* the Study Group on a European Civil Code, online: <<http://www.sgecc.net>>.

<sup>64</sup> See *e.g.*, Sigrid Quack, "Agency Legal Professionals and Transnational Law-Making: A Case of Distributed Agency" (2007) 14 *Organization* 643 (hypothesizing that transnational rule-making is driven largely by legal practitioners seeking solutions to practical problems; solutions that eventually crystallize into stable norms through privately ordered institutions such as commercial arbitration boards).

<sup>65</sup> See *supra* note 32.

and defenders. Rather, my intention is to draw attention to the fact that there is an important way in which harmonization may occur – through the unintentional transmission of legal norms – that is too often ignored. Thus, as with transplant, my approach can be seen as an extension rather than a refutation of existing theories. If a viral model allows us to explain unintentional legal norm transmission, then that explanation can be added to the catalogue of ways in which harmonization may occur.

### **3. A Viral Account**

I propose that a viral account of the spread of employment drug testing norms from the United States to Canada provides a better explanation than accounts based either on transplant or harmonization. In this section, I examine briefly how viral metaphors have been mobilized – both in popular and academic literature – to describe the spread of social phenomena. I will pay particular attention to one subset of these viral accounts, which I take to be the most rigorously formulated, that of *mimetics*. I then defend the use of metaphors in legal theory and legal explanation. In particular, I argue that metaphors are a rudimentary form of modelling, and in turn, that models are an essential tool in scientific reasoning.

#### *3.1. A Brief Proviso on the Pejorative Connotations of “Virus”*

Existing viral accounts transpose some of the language of epidemiology and virology onto the domain of social phenomena. I will do likewise in describing my model. The use of some of these terms – “infection” for example – can be con-

strued as having negative connotations. It brings to mind an otherwise healthy host environment that is rendered somehow pathological through contact with a virus.

Viruses, as it turns out, have a bad reputation. This preconception can colour our interpretation of theories that mobilize the viral metaphor. As Spencer Waller remarks:

Not all viruses are harmful, although more attention naturally is focused on their negative consequences. For obvious reasons, one does not hear a lot about the helpful or innocuous viruses that inhabit our planet in massive numbers and in proportion to other biological organisms. Most viruses are, in fact, innocuous, and are a leading source of genetic innovation. Viruses can have a constructive, as well as destructive, impact on society. For example, exposure to viruses is the leading source of immunity to future infection. In addition, viral capsids potentially can be used as cellular delivery devices for a number of positive medical applications. Good, bad, or indifferent, the virus represents a fundamental building block of life and a powerful metaphor when applied to law and legal ideology.<sup>66</sup>

My use of a viral model is not meant to be normative, but rather analytic and explanatory. I certainly have opinions on the merits of the drug testing norms that spread from the United States to Canada, but one should not deduce them from my use of the language of epidemiology and virology.

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<sup>66</sup> Spencer W. Waller, "The Chicago School Virus" (2007) at 10-11 [unpublished on file with the author]. This is an earlier version of "The Law and Economics Virus" *infra* note 90.

### 3.2. Existing Viral Explanations of Social Phenomena

In recent years, the metaphor of a virus has rapidly gained in popularity as a way to explain the spread of social phenomena. For instance, in 1996, Jeffrey Rayport – then a faculty member at Harvard Business School – published an article in the business magazine *Fast Company* claiming that successful marketing campaigns were viral in that they were self-perpetuating and self-propagating.<sup>67</sup> In the article, Rayport sets out six “rules” for would-be viral marketers to follow, the last of which is to “[i]nvest to reach the tipping point”, which he describes as the threshold over which the rate of infection must pass in order for it to become an epidemic.<sup>68</sup>

Rayport’s article was immensely influential and the term “viral marketing” quickly entered the popular vocabulary. In 2000, the journalist Malcolm Gladwell used Rayport’s notion of a tipping point for the title of what was to become a best-seller.<sup>69</sup> In *The Tipping Point*, Gladwell argues that fads are “social epidemics” and that “[i]deas and products and messages and behaviors spread like viruses do.”<sup>70</sup>

Rayport and Gladwell are just two examples of a vast literature mobilizing the metaphor of a virus to describe the spread of social phenomena from fashion

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<sup>67</sup> Jeffrey Rayport, “The Virus of Marketing” *Fast Company* 06 (December 1996/January 1997) 68.

<sup>68</sup> *Ibid.* (strangely, though “rules” 1 through 5 are described as such, the sixth is referred to as a “law”).

<sup>69</sup> Malcolm Gladwell, *The Tipping Point: How Little Things Can Make a Big Difference* (New York: Little & Brown, 2000). *The Tipping Point* spent a total of twenty-eight weeks on the New York Times Best Seller List, see Danielle Sacks, “The Accidental Guru” *Fast Company* 90 (January 2005) 64.

<sup>70</sup> Gladwell, *ibid.* at 7.

fads to catchy tunes to chain letters. For all their talk of “rules” and “laws” these accounts are more popular than scientific and the metaphor of viral spread is not deployed with particular rigour. Behind this pop-culture phenomenon, however, is a theoretical framework proposed by academic scientists; a framework that has its roots not – as one might expect – in epidemiology, but in genetics. This field of research is referred to by the neologism “memetics”.

### 3.3. *Memetics: Genes, Memes and Cultural Transmission*

The undisputed “founder” of memetics is the evolutionary biologist Richard Dawkins. In his 1976 book *The Selfish Gene*, Dawkins proposed a view of Darwinian evolution that radically diverged from the then prevailing orthodoxy.<sup>71</sup> A central research question for evolutionary biology at the time was the so-called “problem of altruism”.<sup>72</sup> If animal behaviour has an evolutionary basis then altruism would appear to be maladaptive, since it results in increased risk for the organism without any evident benefits in terms of survival. The best explanation for this, before Dawkins, was the theory of group selection, which posited that though altruism is of no direct benefit to individual members of a population, it benefits the population as a whole. According to group selection, the frequency of distribution of “altruism genes” in a population should fluctuate around a constant rather than

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<sup>71</sup> Richard Dawkins, *The Selfish Gene* (New York: Oxford University Press, 1976).

<sup>72</sup> That altruism should prove a problem for evolutionary biology as well as much of the moral theory of economic liberalism is unsurprising. It was, after all, from Malthus that Darwin got the idea that the mechanism driving evolution was the competition or struggle for scarce resources between members of a population, resulting in the “survival of the fittest”. See *e.g.*, Sandra Herbert, “Darwin, Malthus, and Selection” (1971) 4 *J. Hist. Biol.*, 209; but see Peter J. Bowler, “Malthus, Darwin, and the Concept of Struggle” (1976) 37(4) *J. His. Ideas*, 631 (arguing that there were significant differences in the way Malthus and Darwin mobilized the concept of “struggle”).



decreasing to zero, as classical Darwinian theory predicts.<sup>73</sup> Dawkins rejects the group selection explanation and instead proposes a “gene’s eye” view of evolution. The ultimate unit of selection, according to Dawkins, is neither the individual nor the group, but the gene itself. Thus, individuals are nothing more than transitory “hosts” that temporarily house genes on their eternal quest to get reproduced. Any behaviour that increases the chance of reproduction (and thus of a gene being passed on to a new generation) is selected for, regardless of the survival consequences for the individual *or* the population.

Dawkins’ view is thus that we can treat genes as though they had intentions. Though they are mindless replicators, genes function as though they were “telling” the tokens of the phenotypes in which they are expressed what to do. If altruism increases the possibility of replication (*i.e.* of being passed on to successive generations) then that is the behaviour that will be selected for.<sup>74</sup>

In the final chapter of *The Selfish Gene*, Dawkins speculates that a similar mechanism can be found in all situations where there is replication, variation and selection; not just biological evolution. He goes on to note that replication, varia-

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<sup>73</sup> This is a radical simplification of group selection. The *locus classicus* of the theory is George C. Williams, *Adaptation and Natural Selection* (Princeton: Princeton University Press, 1966). For an overview of the debate between group selectionists and individual selectionists, see *e.g.* Elisabeth A. Lloyd, “Units and Levels of Selection: An Anatomy of the Units of Selection Debate” in Rama S. Sing *et al.*, *Thinking About Evolution: Historical, Philosophical, and Political Perspectives* (Cambridge: Cambridge University Press, 2000) 267.

<sup>74</sup> Take the simple example of an animal with two offspring. If she sacrifices herself so that they can survive, then the chances of her genes being passed on are, *ceteris paribus*, the same as what they would be if she allowed them to die and saved herself (since  $\frac{1}{2}$  of each child’s genes come from the mother). If she has three children, then *ceteris paribus*, the chances are in favour of sacrificing herself ( $1$  to  $\frac{3}{2}$ ). If she has one child, then *ceteris paribus*, the best strategy from the genes’ perspective is to sacrifice the child.

tion and selection appear to be at work in the development of culture. In biological evolution, the smallest unit of selection is the gene; Dawkins thus posits that culture must also have a smallest unit of selection. Rather than using terms such as “ideas” or “thoughts”, Dawkins proposes the term “memes”.<sup>75</sup>

Dawkins claimed that memetics is not governed by principles *similar* to the those of Darwinian evolution – which governs genetics – but rather that it is governed by *the same* principles. In *Darwin’s Dangerous Idea*, Daniel Dennet explains this position:

Meme evolution is not just analogous to biological or genic evolution, according to Dawkins. It is not just a process that can be metaphorically described in these evolutionary idioms, but a phenomenon that obeys the laws of natural selection quite exactly. The theory of evolution by natural selection is neutral, he suggests, regarding the differences between memes and genes; these are just different kinds of replicators evolving in different media at different rates.<sup>76</sup>

Memes, then, are like genes in that they are subject to replication, variation, and selection. It does not follow that there is a necessary link between genes and memes; that is, memetics needn’t posit that specific human behaviours or human culture in general has a definite biological basis. The identity of memetics and genetics is at a *structural* level.

What Dawkins needed was a “medium” in which memes could replicate.

He proposed that they replicate by moving from one person’s mind to another

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<sup>75</sup> Dawkins, *The Selfish Gene*, *supra* note 71 at 206. “Meme” is a shortened version of “mimeme” which calls to mind *memesis* or imitation.

<sup>76</sup> Daniel Dennet, *Darwin’s Dangerous Idea* (New York: Simon & Schuster, 1995) at 345.

person's mind through communication. Thus, a catchy tune replicates when somebody whistles it, somebody else hears it and then whistles it in turn.<sup>77</sup> The memes of a chain letter reproduce when somebody reads it and then passes it on.<sup>78</sup> In other words, unlike genes, memes are *contagious*. This “thought contagion” view of memetic replication lends itself to the application of the viral metaphor.<sup>79</sup> Dawkins himself mobilized the viral metaphor in the *Selfish Gene*:

Examples of memes are tunes, ideas, catch-phrases, clothes fashions, ways of making pots or of building arches. Just as genes propagate themselves in the gene pool by leaping from body to body via sperms or eggs, so memes propagate themselves in the meme pool by leaping from brain to brain via a process which, in the broad sense, can be called imitation... *When you plant a fertile meme in my mind you literally parasitize my brain, turning it into a vehicle for the meme's propagation in just the way that a virus may parasitize the genetic mechanism of a host cell...*<sup>80</sup>

In his continued work on memetics, Dawkins has maintained his use of this metaphor<sup>81</sup> and it has become a standard part of memetic theory that memes spread as viruses do.<sup>82</sup>

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<sup>77</sup> Dawkins, *The Selfish Gene*, *supra* note 71 at 206, 209.

<sup>78</sup> Oliver R. Goodenough & Richard Dawkins, “The ‘St-Jude’ Mind Virus” (2002) 371 *Nature* 23; Richard Dawkins, “Viruses of the Mind” in Nigel Wharburton, ed., *Philosophy: Basic Readings* (London: Routledge, 1999) 68.

<sup>79</sup> The term “thought contagion” comes from Derek Gatherer, “Why the ‘Thought Contagion’ Metaphor is Retarding the Progress of Memetics” (1998) 2 *J. Memetics* 135.

<sup>80</sup> *Supra* note 71 at 206-207. Note how Dawkins subtly exploits two different base domains for his metaphor. The contagion and spread elements of the metaphor are based on concepts from epidemiology, whereas the description of memes as parasites that hijack existing machinery to make copies of themselves is based on virology.

<sup>81</sup> Goodenough & Dawkins, *supra* note 78; Dawkins, “Viruses of the Mind”, *supra* note 78.

<sup>82</sup> See e.g., Richard Brodie, *Virus of the Mind: The New Science of the Meme* (Integral Press, 1995).

But the use of the viral metaphor in memetics suffers from insurmountable defects. The most serious is articulated by Derek Gatherer: “The central flaw in the ‘thought contagion’ and ‘mind virus’ hypotheses may be summed up in a single phrase: these theories require individuals to *have* memes.”<sup>83</sup> Memes, as defined by Dawkins, are information structures within the brain that are expressed as words or other forms of behaviour.<sup>84</sup> Yet people do not “have” these information structures in the same way that they have genes. We are born with genes and they continue to inhabit our bodies throughout our lives, whether they are eventually passed down or not. Gene sequences can be observed in individuals even in the absence of phenotypic expression. Information structures, on the other hand are mutable and unstable. Furthermore, there is no way to observe them except by their manifestations; indeed Dawkins *defines* memes in terms of their manifestations. It is thus impossible to say that a meme has been “transmitted” from one individual to another, since this simply amounts to cataloguing similar behaviours (verbal or otherwise) and not the observation of a shared characteristic.

Similar reasoning leads Mark Jeffreys to conclude:

The meme-virus and meme-symbiant analogies need to be dropped altogether. It is impossible to theorize a distinct process of selection by making reference to parasitism. Except in science-fiction tales of alien invasion, all parasitism is part of the same system of natural selection...

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<sup>83</sup> Gatherer, *supra* note 79 at s. 2.1 [emphasis added].

<sup>84</sup> Richard Dawkins, *The Extended Phenotype* (Oxford: Oxford University Press, 1982) at 9.

...Either the phenomenon of culture evolves or it does not – and if it does evolve, it either does so by a separate system of Darwinian selection or it does not – but in no case is it contagious, or viral, or parasitic, at least not from the point of view of individual humans and their brains. If cultural viruses exist, they infect other cultural entities, and describing the entire process of cultural replication itself in virological terms, as if ideas replicated as germs that fever our vulnerable, but otherwise coolly reasoning brains, takes us steadily further away from understanding how any cultural entities might actually be said to replicate and evolve.<sup>85</sup>

Thus, whatever benefits the memetic approach may have as a theory of cultural evolution, they do not derive from the viral metaphor; indeed they are undermined by it. This does not mean, however, that the viral metaphor itself is incoherent or unworkable as an explanation for the spread of social phenomena; only that it must be uncoupled from the conceptual apparatus of memetics.<sup>86</sup> Indeed, as we shall see below, I will argue that epidemiology (rather than genetics) provides a fruitful base domain from which a model of legal norm transmission can be derived.

### 3.4. *Viral Explanations in Legal Scholarship*

Using the metaphor of a virus to describe the spread of legal phenomena is nothing new. An 1828 article in *The Jurist* describes opponents of codification as believing “...the whole legal profession to be impregnated with the virus of *Code-*

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<sup>85</sup> Mark Jeffreys, “The Meme Metaphor” (2000) 43:2 *Perspectives in Biology and Medicine* 227 at 230-31.

<sup>86</sup> Nor does the incoherence of the viral metaphor necessarily sound the death bell for memetics. Daniel Dennet has formulated sophisticated theories of mind and culture that rely on a version of memetics that is thoroughly evolutionary and is purged of the viral metaphor. See Dennet, *supra* note 76.

*mania...*” contracted, apparently, from Jeremy Bentham.<sup>87</sup> The viral metaphor continues to be mobilized as a rhetorical device; a colourful way to make the claim that a legal doctrine or ideology has spread.<sup>88</sup> The following passage from Richard Fischl’s article “The Epidemiology of Critique” is typical:

[M]uch like a virus, Pierre [Schlag’s]’s work seems to produce patterned symptoms among many of those who encounter it (*e.g.* irritable scholar syndrome and a compulsion to ask, with increasing impatience, for directions); in other cases to mutate into harmless conformity with the predispositions of the host (“we’re all deconstructionists now”); to encounter hearty resistance in certain populations (one can almost picture the antibodies swarming his texts); and to reproduce itself endlessly in still others...<sup>89</sup>

Whatever the rhetorical strength of the metaphor (and – as I argue in the next section – we should not underestimate the power of metaphors) its use is unlikely to deepen our understanding of the kind of legal norm transmission that I described in Chapter 1 without first being rendered more systematic.

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<sup>87</sup> John Duer, R.F. Butler & John C. Spencer, “Report of the Revisers of the Laws of the State of New York” (1828) II *The Jurist: Quarterly Journal of Jurisprudence and Legislation* 59 at 65.

<sup>88</sup> See *e.g.*, Duncan Kennedy’s book *A Critique of Adjudication: Fin de Siècle* (Cambridge Mass.: Harvard University Press, 1997), which is organized around the trope that critical legal studies is a “mutation” of a virus that has long infected the “body” of American legal thought. See also, Richard M. Fischl, “The Epidemiology of Critique”, (2003) 57 *U. Miami L. Rev.* 475 (2003); James M. Chen & Gil Grantmore; “The Phages of American Law”, (2002) 36 *U. C. Davis L. Rev.* 455; Esin Örüçü, “Critical Comparative Law: Considering Paradoxes for Legal Systems in Transition” (2000) 4 *Nederlandse Vereniging Voor Rechtsvergelijking* 1; Jeffrey E. Stake, “Pushing Evolutionary Analysis of Law or Evolving Law: Design Without a Designer” (2001) 53 *Fla. L. Rev.* 875. On this point, see also Roderick Macdonald, “Three Metaphors of Norm Migration in International Context” (2009) 34 *Brook. J. Int’l L.* 603 [Macdonald, “Metaphors of Norm Migration”], especially at 635 (distinguishing between those who “...deploy the viral metaphor more as a rhetorical device...” and those who “use it as a conceptual tool”).

<sup>89</sup> Fischl, *ibid.* at 478.

There does exist one attempt – that I am aware of – to apply the viral metaphor systematically to legal phenomena. That attempt is made by Spencer Waller in his paper “The Law and Economics Virus”, where he uses the viral metaphor to generate and then test hypotheses about the spread of the theoretical framework espoused by the Chicago school of law and economics.<sup>90</sup>

Waller’s project is somewhat different from mine in that the phenomenon that he is trying to account for is the spread of a legal *ideology* rather than of legal *norms*. There are many ways to define ideology<sup>91</sup> and it is not my intention to set out a definition here, but from Waller’s object of study it is clear that what he is discussing is the spread of a set of beliefs *about* the law rather than the spread of law.<sup>92</sup> Though it certainly could be argued that legal ideologies are in fact part of the law – exerting normative force by shaping the interpretation and application of other legal norms<sup>93</sup> – Waller implicitly keeps the distinction between positive (state) law and legal ideology, with the latter influencing the development of the former.

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<sup>90</sup> Spencer Waller, “The Law and Economics Virus”, (2007) SSRN Working Paper Series, online: <<http://ssrn.com/abstract=1017882>> (revised 29 September 2009).

<sup>91</sup> For an overview, see Slavoj Žižek, *ed.*, *Mapping Ideology* (London: Verso, 1994).

<sup>92</sup> Waller, citing Robert Bone, “Personal and Impersonal Litigative Forms: Reconceiving the History of Adjudicative Representation” (1990) 70 B.U. L. Rev. 213 at 217, defines legal ideology as “the framework of ideas and beliefs that give meaning to legal concepts and shape legal thought and discourse.” Waller, “The Law and Economics Virus”, *supra* note 90 at note 1.

<sup>93</sup> In civil law jurisdictions, this is explicit in the recognition of doctrine as a source of law, though – as with most positivist treatments of “black letter” law – doctrinal writers are loathe to admit that their pronouncements are ideological.

Despite this focus on ideology rather than norms, Waller does attempt to systematically apply the viral metaphor in order to explain features of the law.

Starting from some basic principles of epidemiology, he proposes:

These principles can be distilled into two working hypotheses to measure the relative success or failure of the spread of the Chicago School virus between areas of the law and between legal jurisdictions. First, the more densely packed the field, the greater the likelihood of deep impact. The more diffuse a population, the less chance of dramatic effect. Second, a virus or ideology spread among a population that has a robust ideological immune system has less chance of lasting impact than a virus spread among a population with no pre-existing ideological immune system or one that is actually favorable to the new way of thinking.<sup>94</sup>

Waller concludes that the law and economics ideology has infected American anti-trust law because that field is both centralized and lacking "...a sufficiently robust set of competing first principles".<sup>95</sup> Conversely, consumer protection law is too decentralized for a single coherent ideology to take hold,<sup>96</sup> and family law is both decentralized and imbued with a "core enduring principle" in the form of the "best interests of the child".<sup>97</sup> As predicted then, the law and economics virus hasn't taken hold in these latter fields.

One weakness of Waller's approach is that he does not provide a justification for selecting *which* principles of epidemiology he mobilizes in generating his

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<sup>94</sup> Waller, "The Law and Economics Virus", *supra* note 90 at 11.

<sup>95</sup> *Ibid.* at 23.

<sup>96</sup> *Ibid.* at 33.

<sup>97</sup> *Ibid.* at 37.



hypotheses. Indeed, he does not appear to have made an extended effort to map concepts of epidemiology onto analogous legal phenomena. As I argue in the next section, such mapping is a crucial step in going beyond metaphor and generating a theoretical *model*.

Furthermore, insofar as there is a mapping of his two concepts, its details are either left unstated or, what's worse, the mapping is incoherent. For instance, it is unclear what exactly gets infected by the law and economics virus. Waller variously claims that what are infected are bodies of law, fields of law, legal jurisdictions,<sup>98</sup> university faculties,<sup>99</sup> disciplines,<sup>100</sup> institutions,<sup>101</sup> enforcement agencies,<sup>102</sup> and people.<sup>103</sup>

There is also no real argument for why centralization of a legal field is analogous to the density of a population, other than that, *ceteris paribus*, a centralized body of law is easier to imbue with a legal ideology or doctrine. But the viral metaphor is not needed to make this claim. Indeed, as Waller himself points out, public choice theory makes similar predictions regarding the relationship between centralization and agency capture.<sup>104</sup> Similarly, we are left without an exposition

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<sup>98</sup> Used, apparently, interchangeably. See, *e.g.*, *Ibid.* at 16.

<sup>99</sup> *Ibid.* at 18.

<sup>100</sup> *Ibid.* at 18.

<sup>101</sup> *Ibid.* at 20.

<sup>102</sup> *Ibid.* at 21.

<sup>103</sup> *Ibid.* at 20.

<sup>104</sup> *Ibid.* at 11.

of the precise nature of the alleged similarity between pre-existing ideologies in a body of law (or jurisdiction, or institution, or whatever entity susceptible to infection) and antibodies. Waller does claim that "...a strong commitment to a pre-existing competing ideology or deep attachment to a differing first principle (particularly if deontological in nature) will render a body of law or legal jurisdiction more immune to the introduction of new legal ideology, all other things being equal," but this is just a truism of human psychology; not a novel hypothesis generated by the viral metaphor.

In his conclusion, Waller claims that his use of the viral metaphor can be generalized:

There is nothing about this approach that should be limited to either the Chicago School, Law and Economics more generally, or the specific fields of law used as illustrations. Like any scientific hypothesis, the results and predictions of this approach should be tested and replicated if possible in connection with other ideologies and fields of law. In particular, closely related areas of law, such as securities regulation and corporate law, contracts and commercial law, or environmental law and land use can be examined to see if centralization and the presence of a competing counter ideology help explain which fields have more broadly embraced the Chicago School and which have not. Similarly, more studies of comparative law can reveal the paths through which legal ideologies spread globally and where they meet resistance.<sup>105</sup>

Perhaps Waller's findings can be replicated, but it isn't obvious that this would be through an extension of the viral metaphor. What he proposes is that

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<sup>105</sup> *Ibid.* at 49-50.

other empirical case studies may confirm his twin hypotheses: (1) that centralization increases the chance of adoption of a legal ideology or doctrine and (2) that a strong pre-existing ideology or doctrine decreases this chance. Even if we grant that the viral metaphor may have been useful in formulating these hypotheses (despite the absence of detailed argument to this effect), it could be entirely jettisoned in future studies without calling them into question. In other words, it is unclear what *work* the viral metaphor would be performing, other than the rhetorical role that I have identified it plays elsewhere.

To resume: Waller's paper is the most systematic attempt to apply the viral metaphor to legal phenomena, but it suffers from several drawbacks. First, it is not systematic *enough* or incoherent, or both. Second, to the extent that Waller proposes and tests particular hypotheses subject to confirmation or refutation elsewhere, they are not clearly the result of the viral metaphor.

#### 3.4.1. *Memetics and the Law*

In addition to Waller's work on the viral metaphor, there is small literature that attempts to apply memetics to law. Some of this literature has taken up Derek Gatherer's call to abandon the thought contagion metaphor,<sup>106</sup> and is therefore not directly relevant to this review of the application of the viral metaphor to the analysis of legal phenomena.<sup>107</sup> Another approach is to use the theory of memet-

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<sup>106</sup> Gatherer, *supra* note 79.

<sup>107</sup> Oliver Goodenough, "Cultural Replication Theory and Law" (2001) 1:3 Gruter Institute Working Papers on Law, Economics, and Evolutionary Biology.

ics as the basis for rethinking those areas of law that govern the spread of ideas.<sup>108</sup> Even if the ideas as virus metaphor is retained in such a context, this work is not relevant to the question of the transmission of legal norms.

One article, however, that *does* make a serious attempt to apply memetics to legal phenomena is Michael S. Fried's "The Evolution of Legal Concepts: the Memetic Perspective".<sup>109</sup>

Though Fried (like others) has abandoned the thought contagion metaphor and focuses exclusively on Darwinian fitness,<sup>110</sup> his insights into why legal phenomena may be particularly well suited to memetic analysis are also relevant to an attempt to systematize the viral metaphor. Fried notes that there are three general difficulties with memetic analysis: (1) that memes are difficult to define – or at least more difficult to define than genes are – making "...memetics somewhat less amenable to study and measurement than genetics", (2) that the mechanisms often cited as responsible for the replication of memes do not guarantee a sufficient level of copying fidelity, and (3) that tracing the lines of descent of memes is extremely difficult.<sup>111</sup> Fried then claims that legal memes have some peculiar features that are shared by few, if any, other collections of memes, and thus:

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<sup>108</sup> As in Jeremy Evans Stake, "Are we Buyers or Hosts? A Memetic Approach to the First Amendment" (2001) 52 Alabama L. Rev. 1213.

<sup>109</sup> Michael S. Fried, "The Evolution of Legal Concepts: The Memetic Perspective (1999) 39 Jurimetrics 291.

<sup>110</sup> But see *ibid.* at 298 (comparing spread of cultural practices to the spread of flu) which demonstrates just how hard it is to excise thought contagion from memetics.

<sup>111</sup> *Ibid.* at 301.

These problems constitute significant hurdles for any general theory of memetics. Nonetheless, when one restricts attention to memes that occur within the legal system, these concerns are greatly reduced. Thus, while this Article primarily addresses the benefits that memetics has to offer the law, it seems that the law also has a great deal to offer the science of memetics.<sup>112</sup>

According to Fried, the features of legal memes (described as “rules of law, precedents, and legal doctrines”)<sup>113</sup> that make them so amenable to memetic analysis are that they are invariably recorded in reporters that are referenced according to a standardized citation form. Thus legal memes can be accurately identified and their spread traced in ways that other memes can’t. Furthermore, standardized citation mechanisms ensure greater copying fidelity than other forms of meme transmission. Consequently, Fried argues, legal memes can be subjected to quantitative analysis through citation counting.<sup>114</sup>

That jurisprudence can be quantitatively analysed by using citations as a proxy for some other phenomenon is not a novel idea.<sup>115</sup> What is novel about Fried’s approach is the phenomenon for which he uses the citations as a proxy. Orthodox jurimetric analysis seeks to find out something about courts through

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<sup>112</sup> *Ibid.* at 302.

<sup>113</sup> *Ibid.* at 307.

<sup>114</sup> *Ibid.* at 310-313.

<sup>115</sup> The germ of this idea is present in Lee Loevinger’s classic polemic “Jurimetrics: The Next Step Forward”, (1949) 33:5 *Minn. L. Rev.* 455. A recent Canadian example is Peter McCormick, *Supreme at Last: The Evolution of the Supreme Court of Canada* (Toronto: James Lorimer and Co., 2000), especially at 23 (claiming “judges are what they cite” and therefore citation patterns are revealing). For an example of citation analysis of secondary sources, see James Leonard, “Seein’ the Cites: A Guided Tour of Citation Patterns in Recent American Law Review Articles” (1990) 34 *St. Louis U. L.J.* 181.

analysis of their deployment of citations. Thus, for example, a high number of citations to minority opinions could indicate a divided or “fractured” court,<sup>116</sup> and a high proportion of citations to decisions from a foreign jurisdiction could indicate a lack of legal autonomy.<sup>117</sup> But Fried proposes that citations can be used as a proxy for measuring the fitness of legal memes. That is, citation density and frequency is evidence of replication and thus reproductive success. In evolutionary biology (for Dawkins), individuals can be seen as simply vessels for their genes; in memetics, “a scholar is just a library’s way of making another library”<sup>118</sup>; in legal evolution, a court is just a citation’s way of making another citation!

Note that, despite his iconoclastic take on the role of courts in decision-making, Fried is essentially within what pluralists call the ideology of modernity.<sup>119</sup> Whatever legal memes are, Fried assumes that they propagate within an ecosystem of official state institutions explicitly engaged in rulemaking. Conversely, the stronger one’s commitment to legal pluralism, the smaller a role standardized citations in official law reports play. Thus, Fried’s claim that legal memes have “a

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<sup>116</sup> David Muttart, *The Empirical Gap in Jurisprudence* (Toronto: University of Toronto Press, 2007) at 92 (using data from McCormick, *supra* note 115).

<sup>117</sup> McCormick, *supra* note 115 at 23-26 (claiming that, given the number of English decisions cited, “...the Supreme Court [of Canada] in the 1950s was still mostly English”).

<sup>118</sup> Dennet, *supra* note 76 at 346.

<sup>119</sup> See text accompanying note 18.

great deal to offer the science of memetics” appears to *depend* on a monist perspective.<sup>120</sup>

I will return to this tension between a pluralist perspective and the use of official law reports as a source of data in Chapter 4. For now, what should be retained is that the very features of what Fried calls legal memes that allow for them to be analyzed quantitatively will prove useful in modelling the epidemic spread of legal norms.

#### **4. Theoretical Basis: Metaphors and Models in Legal Theory**

Thus far, I have maintained that the viral metaphor can be extended into a model. In this section, I will defend the theoretical basis of this project. Often when we come across a metaphor about the law, it is simply a rhetorical device; a convincing or memorable way to make a point that could be made otherwise. At least sometimes, however, the use of metaphor in the analysis of the law goes beyond a clever turn of phrase. The purpose of this section is to interrogate just such cases. In the first subsection I draw some distinctions that clarify some of the different ways we can think about metaphor and the law. The second subsection is aimed at identifying a working theory of the role of metaphors – and their more systematic cousins, models – in legal theory.

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<sup>120</sup> It is *a fortiori* what Macdonald calls a “chirographic” perspective; that is, one reserves a privileged place for language (and in particular, text) in its conception of legal normativity. See (with some irony) Roderick Macdonald, “Non-Chirographic Legal Pluralism” (Paper presented at the Joint Annual Meetings of Law and Society Association and Canadian Law and Society Association, Hilton Bonaventure, Montreal, Quebec, Canada, May 27, 2008) [unpublished].

#### 4.1. *Four Relationships Between Metaphor and Law*

The rubric “metaphor and the law” as a field of inquiry covers a multiplicity of phenomena. Upon reflection, we can see that there are at least four different ways in which we might be interested in the relationship between metaphors and law.

First, we might look at what could be called “legal metaphors.” The object of interest would be how the law figures as a metaphor in non-legal texts. For example, Shakespeare’s *Sonnet 46* is structured as litigation between the author’s heart and his eye, complete with pleadings and verdict.<sup>121</sup> Another example is Kant’s claim that the *Critique of Pure Reason*, is a “tribunal” that will apply the laws of reason and make it “secure in its rightful claims.”<sup>122</sup> From this perspective, the objects of study include metaphor itself as a literary device, as well as the ways in which the symbolism of the law frames our thoughts about any number of subjects, from love to reason.

Second, we may take an interest in metaphors *in* law, that is, how metaphors are used to illustrate points within legal texts. Here, the study of metaphor is subsumed under a larger category of analysis: the use of rhetoric in legal reasoning. From this perspective, legal texts are a “literary genre”<sup>123</sup> and metaphor is

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<sup>121</sup> For a detailed analysis of the legal terminology used in *Sonnet 46*, see John Lord Campbell, *Shakespeare’s Legal Acquirements Considered* (New York: D. Appleton & Co., 1859) at 126-27. For a review of the many legal metaphors used throughout Shakespeare’s work, see Thomas Regnier, “Could Shakespeare Think Like a Lawyer – How Inheritance Law Issues in Hamlet May Shed Light on the Authorship Question” (2002) 57 U. Miami L. Rev. 377.

<sup>122</sup> Immanuel Kant, *The Critique of Pure Reason*, trans. W. Pluhar (Indianapolis: Hackett, 1996 [1781]) at 8 (A xii). On Kant’s use of legal metaphors in the First Critique, see Stoddard, E., “Reason on Trial: Legal Metaphors in the Critique of Pure Reason” (1988) 12 *Philosophy and Literature* 245.

<sup>123</sup> Benjamin L. Berger, “Trial by Metaphor: Rhetoric, Innovation, and the Juridical Text” (2002) 39:3 *Court Review* 30 at 30 (referring to judicial opinions).



one technique – among others – that the author uses to “discharge the... persuasive burden.”<sup>124</sup> Consider, for example, Viscount Sankey’s famous remark in *Woolmington v. DPP*:

Throughout the web of the English Criminal Law one golden thread is always to be seen, that it is the duty of the prosecution to prove the prisoner's guilt subject to what I have already said as to the defence of insanity and subject also to any statutory exception.<sup>125</sup>

The metaphor of a “golden thread” running through the “web” of the law convincingly illustrates the point that a single principle unites the disparate norms of the common law in criminal matters. Furthermore, the metaphor functions to restrict subsequent judicial interpretations by framing later analysis. A later judgement that denied the claim that in criminal matters the Crown must prove the requisite *mens rea* beyond a reasonable doubt would have to admit that it was thereby “severing” the “single golden thread.”

Conversely, a metaphor may be used rhetorically to allow for expansive interpretation. For instance Viscount Sankey (who clearly had a penchant for a clever turn of phrase) supplied Canadian constitutional law with the principle that the Constitution should be given a “large and liberal interpretation” by stating

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<sup>124</sup> *Ibid.* at 32. For a stronger version of the same claim, see Jan G. Deutsch, “Law as Metaphor: A Structural Analysis of Legal Process” (1978) 66 *Georgetown L.J.* 1339 at 1346 (“...a judicial opinion works the way a metaphor works”). See also, Ronald Dworkin, *Law’s Empire* (Cambridge: Harvard University Press, 1986) at 228 and *ff.* (comparing jurisprudence to a “chain novel” written by many novelists); James Boyd White, *The Legal Imagination* (Chicago: University of Chicago Press, 1985) at 211-242 (comparing judges to poets).

<sup>125</sup> [1935] A.C. 462 (H.L.) at 481.

that: “[t]he *British North America Act* planted in Canada a living tree capable of growth and expansion within its natural limits.”<sup>126</sup>

A third relationship between metaphor and law that may be of interest could be called metaphors *of* law. The inquiry here focuses on how legal reasoning itself is metaphorical and how the very concepts and categories of the law are shot through with metaphors. This approach can be distinguished from the analysis of metaphors *in* law in so far as metaphor is taken not just as a rhetorical trope that helps make a legal point persuasive but as a constitutive element of the law.<sup>127</sup> This perspective draws from cognitive science, to which we owe “cognitive metaphor theory”. The fundamental thesis of cognitive metaphor theory can be stated as follows:

This theory reconstructs the foundation in which metaphor was seen as merely literary or rhetorical in contrast with the “real” literal and scientific world. In cognitive theory, metaphor is not only a way of seeing or saying; it is a way of thinking and knowing, the method by which we structure and reason, and it is fundamental, not ornamental.<sup>128</sup>

In contrast to metaphors *in* law, metaphors *of* law are not concepts that are metaphorically stated for rhetorical reasons, but metaphorical concepts. For instance, the notion of “standing” is *defined* as “[a] party's right to make a legal claim

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<sup>126</sup> [1931] A.C. 124 (P.C.) at 136. The examples of *Woolmington* and *Edwards* as examples of restrictive and expansive metaphors respectively are drawn from B. Berger, *supra* note 123.

<sup>127</sup> See *e.g.* James E. Murray, “Understanding Law as Metaphor” (1984) 34 J. Legal Educ. 714; Marie-Claude Prémont, *Tropismes du droit – Logique métaphorique et logique métonymique du langage juridique* (Montreal: Liber/Thémis, 2003).

<sup>128</sup> Linda L. Berger, “What is the Sound of a Corporation Speaking? How the Cognitive Theory of Metaphor can Help Lawyers Shape the Law” (2004) 2 Journal of the Association of Legal Writing Directors 169 at 170.

or seek judicial enforcement of a duty or right.”<sup>129</sup> Derived from the Latin *locus standi* (literally “place of standing”), the concept appeals to the image of standing up before the tribunal. A whole complex of metaphors in English relate this image of physical presence by standing to the vindication of a right or claim (“stand up and be heard”, “I won’t stand for it”, “stand one’s ground”, *etc.*).<sup>130</sup> Unlike Viscount Sankey’s “single golden thread” or “living tree” the metaphor of “standing” is not a persuasive way to describe a legal concept; it *is* the legal concept.<sup>131</sup>

Finally – and most importantly, for my purposes – there are metaphors *about* the law. A metaphor about the law is a way of making claims regarding law (or a part of the law) as a phenomenon *per se*. Consider the following well-known passage from the preface to Marx’s *Contribution to the Critique of Political Economy*:

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<sup>129</sup> *Black’s Law Dictionary*, 8<sup>th</sup> ed., *s.v.* “standing.”

<sup>130</sup> A similar, though less clear pattern can be seen in French. Consider “se tenir debout” (to resist or defend oneself) or, in law “débouter une action” (when a tribunal rejects a pleading).

<sup>131</sup> One could argue that the difference between metaphors in law and metaphors of law is merely one of degree. On this view, metaphors of law are simply those metaphors in law that have been so often repeated that they have “died.” Though my personal view is that the cognitivist approach describes something deeper and epistemologically more important than the passage from “live” to “dead” metaphors, I am not prepared to defend this intuition here. For a critical discussion of the notion of “dead metaphor” see George Lakoff, “The Death of Dead Metaphor” (1987) 2:2 *Metaphor and Symbolic Activity* 143. See also Max Black “Metaphor” in *Models and Metaphors: Studies in Language and Philosophy* (Ithaca: Cornell University Press, 1962) 25 at 32-34 (describing the view that dead metaphors are a species of *catathesis*, *i.e.* “the use of a word to remedy a gap in the vocabulary”). I do not propose that the four ways I have divided the analysis of the relationship between metaphor and law is anything other than a heuristic device.

In the social production of their existence, men inevitably enter into definite relations, which are independent of their will, namely relations of production appropriate to a given stage in the development of their material forces of production. *The totality of these relations of production constitutes the economic structure of society, the real foundation, on which arises a legal and political superstructure and to which correspond definite forms of social consciousness.*<sup>132</sup>

Marx's architectural metaphor has all the rhetorical advantages of the literary trope; it uses a simple and concrete image to convey a complex and abstract claim. But it is more than just a persuasive way of stating what could easily be stated literally. The metaphor of foundation and superstructure makes a substantive claim about the law. Marx posits an ontology of the law: the legal and the political are not *like* a superstructure, they *are* a superstructure. We can thus say that the metaphor does not merely fulfill an aesthetic function, but also an epistemic one in so far as it serves to generate knowledge about the world.

From Marx's simple metaphor, a large number of conclusions can be drawn about the law. Whether we (metaphorically!) describe the metaphor as a framework, a lens or a map,<sup>133</sup> it serves to organize our experience by highlighting some features of the world while overlooking others.<sup>134</sup> Furthermore, this organizing function allows us to compare, contrast and order empirical observations about the law using the metaphor as a standard. For example, we might notice

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<sup>132</sup> Karl Marx, *A Contribution to the Critique of Political Economy*, (Moscow: Progress Publishers, 1977) at 21 (italics mine).

<sup>133</sup> Berger, *supra* note 128 at 169-70.

<sup>134</sup> Black, "Metaphor", *supra* note 131 at 41-42 (arguing that we "see through" metaphors).

that freedom of contract is an important principle of most modern legal systems. From this observation, we can ask what features of the economic base correspond to or determine this feature of the legal superstructure. We can then go on to ask whether these features are also related to other features of the same legal system, for instance the law of successions.<sup>135</sup> In other words, Marx's metaphor provides us with an elementary *model* for understanding the law. It is this relationship between metaphors about the law and models of law that I want to explore in the following subsection.

#### 4.2. *Metaphors and Models: What They Mean and What They Do*

While there is a substantial literature on (what I have called) legal metaphors, metaphors in law and metaphors of law, there is little published research that theorizes metaphors *about* law.<sup>136</sup> This is not to say that theorists do not make abundant use of metaphors in thinking about the law; legal theory is rife with metaphor.<sup>137</sup> Typically, however, metaphor is mobilized without an explicit defence of its use. In the few works that *do* defend the use of metaphor, the defence

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<sup>135</sup> A large body of Marxist legal theory is concerned with exactly this type of question. See *e.g.* Evgeny B. Pashukanis, "The General Theory of Law and Marxism" in P. Beirne & R. Sharlet (eds.) *Pashukanis: Selected Writings on Marxism and Law*, trans. P. B. Maggs (London: Academic Press, 1980 [1924]); Karl Renner, *The Institutions of Private Law and Their Social Functions*, trans. A. Schwartzchild (London: Routledge, 1979 [1949]).

<sup>136</sup> Two exceptions are Macdonald, "Metaphors of Norm Migration", *supra* note 88, and Bernard J. Hibbitts, "Making Sense of Metaphors: Visuality, Aurality, and the Reconfiguration of American Legal Discourse" (1995) 16 *Cardozo L. Rev.* 229.

<sup>137</sup> To cite just two "classics" consider: Thomas Hobbes, *Leviathan* (London: Penguin Books, 1968 (the metaphor of a commonwealth being a person)); Hart, *The Concept of Law*, *supra* note 14 (the metaphor of law having an open texture).

is based either (a) on a general claim that metaphors are important to thought,<sup>138</sup> or (b) on a claim that law is an inherently discursive phenomenon.<sup>139</sup> Whereas (a) is true, it is not particularly satisfying as a defence of methodology. On the other hand, (b) constitutes essentially a category mistake. It is a *non sequitur* to claim that since some *X* has a property *Y* that a *theory of X* should also have property *Y*. A theory of duck behaviour may claim that ducks quack, but it would be absurd to claim that therefore a theory of duck behaviour quacks!

This does not mean, however, that we are without any resources for thinking about the role of metaphor in legal theory. Significant work has been done on the analysis of metaphor generally and on the relationship between metaphors and models in particular. In the remainder of this subsection I provide a brief overview of the state of (some aspects of) metaphor theory, ultimately arguing that metaphors are best understood as a kind of speech act. Drawing primarily on the work of the philosopher Max Black, I will then provide a sketch of the relationship between metaphors and models, paying particular attention to their role in legal theory.

The standard view of metaphor is that it involves the transfer of a term from the object to which it designates to another object that it designates by anal-

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<sup>138</sup> See e.g. Jean-Guy Belley, “Une métaphor chimique pour le droit” in *Le droit soluble, Contributions québécoises à l'étude de l'internormativité* (Paris: LGDJ, 1996) 7-20.

<sup>139</sup> See e.g. White, *supra* note 124 at 2.

ogy or comparison.<sup>140</sup> According to this “comparison view”, which is attributed to Aristotle,<sup>141</sup> a metaphor is essentially an ellipsis of a simile.<sup>142</sup> Thus, Marx’s metaphor cited above would be a gloss of (something like): “the economic is *like* a foundation; the political and the legal are *like* a superstructure; and furthermore the relationship between the political, legal, and economic is *like* the relationship between a foundation and a superstructure.”

The comparison view suffers from several problems, the most serious of which is its vacuity. To gloss “the law is a superstructure” as “the law is *like* a superstructure” tells us nothing about the relation of similarity between the two. For the metaphor to have meaning requires us to know *in what respects* the law is like a superstructure. Thus the gloss would have to be something like: “the law has some set of properties (P<sub>1</sub>, P<sub>2</sub> ... P<sub>n</sub>) and it is like a superstructure in that superstructures also have that set of properties.” But this gloss demonstrates the vacuity of the comparison view as a theory of metaphor meaning since whatever set of properties that the law shares with a superstructure is not contained in the metaphor, but

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<sup>140</sup> This is consonant with the philology of the word “metaphor”, which derives from the Greek *metaphorō* – “transfer.”

<sup>141</sup> See Aristotle, *The Poetics*, in *The Rhetoric and The Poetics of Aristotle*, trans. Ingram Bywater (New York: Random House, 1954) 223-24 (7457b lines 8-11) (“[m]etaphor consists in giving the thing a name that belongs to something else; the transference being either from genus to species, or from species to genus, or from species to species, or on grounds of analogy).

<sup>142</sup> See *e.g.* John R. Searle, “Metaphor” in Andrew Ortony, *ed.*, *Metaphor and Thought* (Cambridge: Cambridge University Press, 1979) 92-123 at 105 and *ff.* (describing “...the comparison theory... goes back to Aristotle... [and] says all metaphor is really a literal simile with the “like” or “as” deleted”); Black, “Metaphor”, *supra* note 131 at 35 and *ff.* (stating that this view of metaphor, as condensed simile or comparison, has been very popular). See also, Donald Davidson, “What Metaphors Mean” in Aloysius P. Martinich, *The Philosophy of Language*, 3<sup>rd</sup> ed. (Oxford: Oxford University Press, 1996) 415 at 419-21.

requires the interpreter to supply them.<sup>143</sup> Furthermore, the metaphor provides no guidance, in principle, for what set of properties should be used as comprising the similarity relation, since, as one critic put it: “everything is like everything, and in endless ways.”<sup>144</sup>

Some philosophers have attempted to retain a theory of metaphor based on metaphor meaning, either by rehabilitating the comparison view<sup>145</sup> or by proposing another theory of meaning.<sup>146</sup> A more promising approach – in my view – is to refocus the analysis of metaphor from what metaphors *mean* to what metaphors *do*; that is, to analyse the *pragmatics* of metaphor.

Pragmatics is that part of linguistic theory which focuses on what words do, rather than what they mean. Thus “[a] pragmatic treatment of a feature of the use of a language would explain the feature in terms of general principles governing appropriate utterance, rather than in terms of a semantic rule.”<sup>147</sup>

Typical cases of utterances that are not satisfactorily accounted for by semantic rules but which are readily explained by pragmatics include orders, threats

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<sup>143</sup> Davidson, *ibid.* at 416-17.

<sup>144</sup> *Ibid.* at 423.

<sup>145</sup> See *e.g.* Andrew Ortony, “The Role of Similarity in Similes and Metaphors” in Ortony, *supra* note 142, 186.

<sup>146</sup> See *e.g.* Black, “Metaphor”, *supra* note 131 (proposing an “interactive” view of metaphor that abandons the comparison view but maintains the centrality of metaphorical meaning). See also, Max Black “More on Metaphor” in Ortony, *Metaphor and Thought*, *supra* note 142, 19 (further fleshing out the interactive view).

<sup>147</sup> Simon Blackburn, *Oxford Dictionary of Philosophy* (Oxford: Oxford University Press, 1996) *s.v.* “pragmatics”.



and promises. Some philosophers, have suggested that metaphor should be added to this list.<sup>148</sup> Donald Davidson states this view – which we can call “the speech act theory of metaphor” – in its strongest form:

No theory of metaphorical meaning or metaphorical truth can help explain how metaphor works. Metaphor runs on the same familiar linguistic tracks that the plainest sentences do... What distinguishes metaphor is not meaning but use – in this it is like assertion, hinting, lying, promising or criticizing. And the special use to which we put language in metaphor is not – cannot be – to “say something” special, no matter how indirectly. For a metaphor *says* only what shows on its face...<sup>149</sup>

Note that this approach need not do violence to our common-sense intuitions about metaphor. Certainly, one of the things metaphors do (and perhaps what they do best) is to invite the hearer<sup>150</sup> to make comparisons. Perhaps the best way to think about this is to say that the utterer of a metaphor is posing a *hypothesis*. This hypothesis can lead the hearer to see things differently, to notice relationships, analogies and similarities, *etc.* The metaphor doesn’t do this by bearing some special metaphorical meaning, but precisely because of its literal meaning. The fact that the utterance would be defective if interpreted literally acts as an in-

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<sup>148</sup> See *e.g.* Davidson, *supra* note 142; Searle, *supra* note 142; Jerry L. Morgan, “Observations on the Pragmatics of Metaphor” in Ortony, *Metaphor and Thought*, *supra* note 142, 136.

<sup>149</sup> Davidson, *ibid.* at 423. John Searle makes a nearly identical point in *supra* note 142 at 100 (“... strictly speaking, in metaphor there is never a change of meaning...”).

<sup>150</sup> In this section I use the standard terminology of pragmatics, including “speaker,” “hearer,” and “utterance.” Of course this also applies to written metaphors.

indicator to the hearer that she should embark upon such an interpretative exercise.<sup>151</sup>

Another advantage of the speech-act theory of metaphor is that, in jettisoning the search for a the literal meaning that can be inferred by “correctly” glossing metaphorical meaning, it allows for the open-ended nature of metaphor. If metaphors are just elliptical similes and similes are just comparisons waiting to be translated by the mapping of the correct set of shared properties, then metaphors have no particular creative role to play. And yet metaphors *do* play such a role, as Max Black explains:

A memorable metaphor has the power to bring two separate domains into cognitive and emotional relation by using language directly appropriate to the one as a lens for seeing the other; the implications, suggestions, and supporting values entwined with the literal use of the metaphorical expression enable us to see a new subject matter in a new way. The extended meanings that result, the relations between initially disparate realms created, can neither be antecedently predicted nor subsequently paraphrased in prose. We can comment *upon* the metaphor, but the metaphor itself neither needs nor invites explanation and paraphrase. Metaphorical thought is a distinctive mode of achieving insight, not to be construed as an ornamental substitute for plain thought.<sup>152</sup>

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<sup>151</sup> For instance because if understood literally the utterance would be patently absurd, obviously false, or trivially true. See Davidson, *supra* note 142 at 422-23. See also Searle, *supra* note 142 at 114.

<sup>152</sup> Max Black, “Models and Archetypes” in Black, *Metaphors and Models*, *supra* note 131, 219 at 237.

It is arguably this creative role that distinguishes metaphor from other speech-acts that rely upon hearer recognition of defectiveness as interpretative indicators (such as irony).<sup>153</sup>

Though the speech-act theory of metaphor provides a more satisfying explanation for metaphor than the comparison theory, it does not clearly account for metaphors of law like Marx's base/superstructure description. On the speech-act view, Marx's metaphor needn't be glossed in order to discover an elliptical simile that will reveal the literal meaning for which the metaphor is a substitute. But if the "implications, suggestions, and supporting values" that the base/superstructure metaphor conjures are to genuinely provide a "distinctive insight", then something more systematic is required. Marx's metaphor functions as a *model*.

Models and metaphors appear to work in a similar fashion. In both cases, insight is achieved by the projection of a phenomenon or set of phenomena onto another. But how does this projection function? As I proposed above, we can say that a metaphor proposes a hypothesis to the hearer, who then interprets its literal meaning to see a new subject matter in a new way. This is achieved by the projection of the complex of "implications, suggestions, and supporting values" beyond the literal meaning of the utterance. Following Max Black, I think a similar phenomenon is at work in the construction of models, with the primary difference being their systematic nature.

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<sup>153</sup> See Searle, *supra* note 142 at 120-21.

In the case of a scale model (of an airplane, for example), the relationship between the modelled object and the model is one of isomorphism. Two objects are isomorphic – from Greek “*isos*” (equal) and “*morphē*” (form) – when they are identical in form and proportion, though not necessarily size. Similarly, in mathematical logic, two logical languages are isomorphic when all the possible statements in one language have an equivalent in the second. When two languages are isomorphic, we say that the second language *models* the first.<sup>154</sup>

In a general sense, isomorphism also characterizes theoretical models.<sup>155</sup> We can say that  $X$  models  $Y$  in so far as the structure of  $X$  is reproduced in  $Y$ . Of particular interest is the structure of inference or of implication.<sup>156</sup> This allows us to “move” from a (relatively) well-known domain to a (relatively) unknown one. Thus, if  $X$  is some phenomenon about which we know that whenever it has property  $a$  it also has property  $b$ , then if  $Y$  is a model of  $X$  and we know that  $Y$  has property  $a$ , we can hypothesize that  $Y$  also has property  $b$ .

How can this conception of a model be applied to theories of law? And what is the relationship to metaphor? An example is in order. Throughout this

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<sup>154</sup> This is what is often called “classical model theory” in mathematical logic. It is the basis of Gödel’s proof of the completeness theorem, in which he proved that no additional inference rules are required to prove all the logically valid formulas in a deductive system of first-order predicate calculus – *i.e.* first-order predicate calculus is “complete.” For a simpler proof of the same theorem, see Leon Henkin, “The Completeness of the First-Order Functional Calculus” (1949) 14 *Journal of Symbolic Logic* 159. On model theory in general, see Alain Badiou, *Le concept de modèle*, 2<sup>nd</sup> ed. (Paris: Fayard, 2007). For a discussion of model theory and law, see William H. Widen, “Forcing Analogies in Law: Badiou, Set Theory and Models” (2009) 29 *Cardozo L. Rev.* 2407.

<sup>155</sup> Black, “Models and Archetypes”, *supra* note 152 at 222.

<sup>156</sup> *Ibid.* at 223 (“The analogue shares with its original not a set of features or an identical proportionality of magnitudes but, more abstractly, the same structure or pattern of relationships.”)

thesis, I have been defending the claim that, in some cases, legal norm transmission is viral. This is clearly a metaphor; legal norms are no more viruses than ogres are onions. But it also suggests that some of the features of virus transmission (a field about which there is a significant amount of detailed knowledge) are also features of unintentional norm transmission (a field about which we know very little): “[e]very metaphor is the tip of a submerged model.”<sup>157</sup> Of course, a substantial amount of work needs to be done before the metaphor becomes a model. Max Black describes the difference between the two as follows:

Use of theoretical models resembles the use of metaphors in requiring analogical transfer of a vocabulary. Metaphor and model-making reveal new relationships; both are attempts to pour new content into old bottles. But a metaphor operates largely with *commonplace* implications. You need only proverbial knowledge, as it were, to have your metaphor understood; but the maker of a scientific model must have prior control of a well-knit scientific theory if he is to do more than hang an attractive picture on an algebraic formula. Systematic complexity of the source of the model and capacity for analogical development are of the essence.<sup>158</sup>

One of my central claims is that the metaphor “law is a virus,” which is based on the “proverbial knowledge” that viruses are self-replicating organisms that spread across a host population through a process of infection, can be transformed into a model. What is required is (a) a deeper understanding of the various entities and relationships that constitute epidemiology, and (b) “projection” of

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<sup>157</sup> Black, “More on Metaphor”, *supra* note 146 at 31.

<sup>158</sup> Black, “Models and Archetypes”, *supra* note 152 at 239 [emphasis in original].

these entities and relationships onto empirical observations of legal norm transmission. This is precisely what I propose in Chapters 3 and 4.

Some provisos apply to this sketch of a methodology of moving from metaphor to model. First, it must be admitted that the process of projection implies a choice. Just as metaphors do not have a single meaning just waiting to be translated into literal speech, the different domains of knowledge related by a model do not have a single set of mapping or translating functions just waiting to be discovered. Every model carries with it “...risks of fallacious inferences from inevitable irrelevancies...”<sup>159</sup> Second, just as a metaphor proposes a hypothesis to the interpreter, so a model proposes a set of hypotheses about the target domain. These hypotheses must still be tested. In other words, a model is a methodology of hypothesis generation that allows us to “see connections” that would otherwise be overlooked;<sup>160</sup> it is *not* a methodology of hypothesis verification. Finally, in choosing to extend a metaphor to a model, one must be prepared to run the risk that the expected isomorphism does not reveal itself. Not every secondary domain “fits” the domain on which we would like to model it.<sup>161</sup>

#### 4.3. *Concluding Remarks on Metaphors and Models*

Legal scholars who venture beyond the doctrinal exposition and analysis of “black letter law” tend to think of themselves as engaging in some form of social science

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<sup>159</sup> *Ibid.* at 223.

<sup>160</sup> *Ibid.* at 237.

<sup>161</sup> *Ibid.* at 238.

or philosophy. As such, we tend to view metaphors with some suspicion. After all, metaphors are the realm of literature and rhetoric; reliance upon them to do substantive intellectual work smacks of methodological sloppiness. Models, on the other hand, have the ring of rigour, and most of us would readily admit to using them – if only we could figure out what they were.

What I hope to have shown in this section is that metaphors and models are related phenomena. Furthermore, there is no need to look askance at metaphor, which can be a powerful methodological tool for generating models. Finally, there is nothing mysterious about models. Properly understood, they can be useful in generating new hypotheses about legal phenomena.

## **5. Conclusion**

In this chapter I situated the metaphor of viral spread within the context of other explanations of norm transmission in legal theory. My primary argument in this regard was that a viral account is better suited to explaining unintentional norm transmission than the competing metaphors of transplant and harmonization.

Having established the essentially metaphorical nature of existing explanations of norm transmission as well as the viral account, I advanced that metaphors about law are both ubiquitous and under-theorized. I then argued that systematizing metaphors into models may generate new hypotheses about legal phenomena.

We will now embark upon the process of refining and systematizing the viral metaphor into an epidemiological model. First, in Chapter 3, I provide an introduction to the base domain of epidemiology. Then, in Chapter 4, I describe the mapping function whereby the concepts of epidemiology can be transposed to the legal field.



## CHAPTER 3

### THE MODEL'S BASE DOMAIN: EPIDEMIOLOGY

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## Introduction

Part of the initial persuasiveness of the viral spread metaphor is the result of a subtle conflation of the base domains of epidemiology and virology.<sup>1</sup> On one hand, the virus metaphor calls to mind the propagation of a pathology across a population, with the virus serving as the proximate cause of the symptoms. Here the base domain of the metaphor is epidemiology, and the metaphor would be perfectly adequate if other forms of infection and contagion were proposed, prions or bacteria for instance.<sup>2</sup> But the virus metaphor also calls to mind the hijacking of a host organism's cellular machinery in order to replicate and propagate itself. Here the base domain of the metaphor is virology.<sup>3</sup>

There is certainly nothing wrong with a metaphor that calls upon two base domains. If – as I argued in Chapter 2 – a metaphor is essentially a hypothesis that invites the hearer to attend to relationships, analogies and similarities, then one that draws upon two base domains is likely to be particularly rich. However, if we want to refine the metaphor into a model, then we must pay strict attention to the claims of isomorphism that are made between base domains and the secondary domain. This is further complicated by the fact that the concepts of one

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<sup>1</sup> Dawkins is particularly guilty of this, see Chapter 2, note 80 *supra*.

<sup>2</sup> Robert Aunger proposes the prion as a base domain for the meme in “Culture vultures” (1999) 39:5 *Sciences* 36. Mark Jeffreys rejects prions as a base domain on the grounds that “...prions offer only an impoverished and limited sort of replication, hardly an adequate analogy for the magnificent complexity of cultural evolution” (“The Meme Metaphor” (2000) 43:2 *Perspectives in Biology and Medicine* 227 at 229).

<sup>3</sup> See *e.g.* James M. Chen & Gil Grantmore, “The Phages of American Law” (2003) 36 *U.C. Davis L. Rev.* 455.

base domain may be used in the other. If a concept from one base domain is mapped onto the secondary domain, then this does not immediately authorize one to draw conclusions on the basis of implications derived from the second base domain, which may also use the concept. For instance, in virology, virulence is defined as “[t]he capacity of a virus... to produce disease in a host...”<sup>4</sup> but virulence is also an important factor in the epidemiology of viral infections.<sup>5</sup> If I want to make a claim about the virulence of a legal norm, then I need to be explicit about which base domain I am drawing from and to be careful not to draw conclusions implied by a second base domain. With this in mind, I will draw solely on epidemiology in constructing a model of norm transmission.

The reason for this narrowing of the base domain is precisely to avoid the kind of conflation that I described. As I argued in Chapter 2, such conflation (not only between epidemiology and virology, but also between these base domains and that of evolution) is one of the causes of incoherence in social contagion theories. Though it is possible *in principle* to build a model using two base domains, it raises serious problems of feasibility, notably by adding an order of complexity to the model. It may be the case that virology and epidemiology could be used simultaneously as base domains without contradiction, but there is nothing necessary about this. A more prudent approach is to attempt to create an epidemiological

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<sup>4</sup> Kennet L. Tyler & Bernard N. Fields “Pathogenesis of Viral Infections” in Bernard N. Fields *et al.*, *Fundamental Virology*, 2<sup>nd</sup> ed. (New York: Raven, 1991) 191 at 191.

<sup>5</sup> The rate of spread of viruses that propagate by host-to-host transmission will depend in large part on their virulence if their transmission requires the spreading host to exhibit symptoms (*e.g.*, sneezing, sores, coughing, *etc.*).

model and a viral model and then to see if they can be fruitfully integrated. Such an endeavour would go well beyond the scope of this thesis. Instead, I propose to use epidemiology as my exclusive base domain. I chose epidemiology rather than virology because the former captures my initial intuition that norms are in some sense contagious and that they can spread. If this model proves defensible and useful, then later work can build upon it and one of the options would be to integrate virological concepts.

In this chapter I provide an overview of the field of epidemiology, concentrating on key concepts that may prove useful in an epidemiological model of norm spread. One of the points on which I shall insist is that one's conception of several core concepts in epidemiology will depend on one's research objectives. This overview of epidemiology will allow me to proceed, in Chapter 4, with the mapping of several of its key concepts onto the domain of law.

## **1. Epidemiology and Epidemic Theory**

Epidemiology is conventionally defined as the study of the distribution of disease.<sup>6</sup> It is thus distinct from other fields of research into human health, as it is "...primarily concerned with disease and health hazards in populations and not

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<sup>6</sup> From Greek "*epi*", "*dēmos*" and "*logos*" we can say that epidemiology is a discourse relating that which is "upon" the people.

individuals.”<sup>7</sup> However, this definition is somewhat narrow and actually only covers a subset of phenomena that might be of interest to epidemiologists. This subset is limited by the concept of disease and thus is more properly termed “epidemiopathology”.<sup>8</sup> Even if we leave aside the problems inherent in determining what constitutes a pathology,<sup>9</sup> limiting the field of epidemiology to the study of disease distribution is difficult to defend on principled grounds. The concepts, methods, and reasoning of epidemiology are applicable to many obviously non-pathological phenomena that may be distributed across a population. For example, there is no principled difference between studying the incidence of clinical obesity (defined as a pathology) in a population and studying the distribution of individuals of “normal” weight. Furthermore, epidemiology may fruitfully be used to study non health-related phenomena and their distribution across a population; voting preferences within a citizenry, for example.<sup>10</sup> For our purposes, we can define epidemiology as: *the study of the distribution of measurable phenomena across a population*. Of course, the majority of epidemiological research is in the field of

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<sup>7</sup> Raj S. Bhopal, *Concepts of Epidemiology: An Integrated Introduction to the Ideas, Theories, Principles, and Methods of Epidemiology* (Oxford: Oxford University Press, 2002) at 6. See also, Abraham M. Lilienfeld & David E. Lilienfeld, *Foundations of Epidemiology*, 2<sup>nd</sup> ed. (Oxford: Oxford University Press, 1980) at 3 (stating that epidemiology is the study of “...the patterns of disease occurrence in human populations and of the factors that influence these patterns.”). This concern with populations rather than individuals is encapsulated by the joke according to which an epidemiologist is a physician who can count (recounted in Anders Ahlbom & Staffan Norell, *Introduction to Modern Epidemiology*, 2<sup>nd</sup> ed., trans. by Gunilla Ahlbom (Chesnut Hill, MA: Epidemiology Resources, 1990) at i.

<sup>8</sup> See Bhopal, *ibid.* at 3.

<sup>9</sup> See generally, Georges Canguilhem, *Le normal et le pathologique*, 10<sup>th</sup> ed. (Paris: P.U.F., 2006).

<sup>10</sup> See e.g. Daniel Dorling, Colin Rallings & Michael Thrasher, “The Epidemiology of the Liberal Democrat Vote” (1998) 17:1 *Political Geography* 45.

epidemiopathology and consequently much of the literature upon which I will draw in this chapter is concerned with disease.

If the conventional definition of epidemiology is in one sense too narrow for our purposes (in that it is limited to pathology) it is also too broad in another sense. I am arguing that employment drug testing norms *spread*; first from the United States to Canada and then within the Canadian jurisprudence. Epidemiology, even when restricted to the sub-field of epidemiopathology, is not necessarily concerned about the spread of disease. Returning to the example of obesity studies, the epidemiologist may try to relate the geographic dispersion of obesity to local diet, without making any claims about the spread of obesity.<sup>11</sup> Another example is the famous pair of “Whitehall studies”<sup>12</sup> which demonstrated that social class background is a strong predictor of future health outcomes. Evidently, the social class of one’s parents is not something that is susceptible to spread.

Furthermore, not all spread is the kind of spread that I am interested in. My claim is that the spread of employment testing norms is the result of *contagion*, that is, the process by which a condition spreads from one individual to another. Obesity might spread in the sense that diet patterns related thereto may be adopted by neighbouring populations, or populations with such diet patterns may migrate. Insofar as obesity prevalence is also related to genetic predisposition, it

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<sup>11</sup> See generally, Frank B. Hu, *Obesity Epidemiology* (Oxford: Oxford University Press, 2008).

<sup>12</sup> Michael G. Marmot *et al.*, “Employment Grade and Coronary Heart Disease in British Civil Servants” (1978) 32 *J. of Epidemiology and Community Health* 244; Michael G. Marmot *et al.*, “Health Inequalities Among British Civil Servants: The Whitehall II Study” (1991) 337 *Lancet* 1387.

may also spread as the reproductive patterns of the population change (for instance as new members, having a greater or lesser predisposition to obesity, interbreed with members of the pre-existing population). Similarly, the social class background of a population may be observed to spread. For instance, as a neighbourhood becomes popular amongst those from a higher class background than the previous population (*i.e.* gentrification) we may be able to observe a geographic shift in the distribution of the social class backgrounds population members. In none of these cases, however, would we infer that obesity or social class background were contagious – at least not in the ordinary sense that this term is used. This common-sense conception of contagion will be further refined below, but for now we can further refine the base domain used in constructing our model to be: *epidemiology, understood as the study of the distribution of a contagious phenomenon across a population.*

Epidemiology is both an applied science and a theoretical body of knowledge. As an applied science, it underpins the practice of public health and is largely concerned with empirical questions that can be mobilized to solve real-world problems.<sup>13</sup> Thus, much of the epidemiological literature is concerned with study design under conditions of imperfect information. There is also, however a large body of theoretical literature in epidemiology; a field that is aptly called “theoretical epidemiology”. This field is characterized by a high degree of mathematization. It seeks to uncover the general principles (or “laws”) that regu-

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<sup>13</sup> Bhopal, *supra* note 7 at 4-6 and 98-101; Lilienfeld & Lilienfeld, *supra* note 7 at 10-12.



late the distribution of phenomena across populations, given certain parameters.<sup>14</sup> Within theoretical epidemiology, I will be particularly concerned with the work on epidemic theory, which seeks to understand and explain the spread of contagious phenomena across a population.

In building our model, then, we will need to cash out the notions of population, contagion, and distribution, both in terms of how they are mobilized within epidemiology and how they might be adapted to apply in the case where the phenomenon under investigation is legal norms.

## 2. Populations

Populations are not natural objects that simply exist “out there” to be studied; rather they are constructs that are used to understand aggregates of individuals. These constructs are defined in terms of the objectives of the researcher. Thus, for instance, if I want to know what the prevalence<sup>15</sup> of obesity is among Canadians over the age of sixteen, then my population is *defined* as “Canadians over the age of sixteen”. In this population, the sex of the individual members is a personal characteristic that might be useful to count in order to determine whether it is related to prevalence (*i.e.* whether sex is a risk factor<sup>16</sup> for obesity). Yet, I could just as easily have the research objective of determining what the prevalence of

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<sup>14</sup> Lilienfeld & Lilienfeld, *ibid.* at 355-63.

<sup>15</sup> Simplifying somewhat, we can say that prevalence is the count of all instances of the factor of interest in the study population. See Bhopal, *supra* note 7 at 179-188. See also Ahlbom & Norell, *supra* note 7 at 5.

<sup>16</sup> Risk factors are generally assumed to be causal, though they need not be, see Bhopal, *ibid.* at 161-67. Ahlbom & Norell use the term “risk indicators” (*ibid.* at 36-40).

obesity is among Canadian women over the age of sixteen. My population is then defined as “Canadian women over the age of sixteen” and sex becomes an element of my population definition, rather than a property of its members that could have an impact on incidence. This process of defining a population is called “drawing a population boundary”.<sup>17</sup>

Once a population boundary has been drawn, then we must make decisions about who falls within it. Using the same example, we could ask ourselves whether people whose sixteenth birthday occurred during the period studied should be considered members of the population. Note that if decisions about who falls within a population generate stable criteria, then those criteria can be used to refine its boundary.

Defining a population is the first step in creating a “population profile”, which includes defining a time-period over which the population will be examined, counting the population members, describing their characteristics, *etc.*<sup>18</sup> A well-profiled population will allow for hypotheses to be proposed explaining the distribution of the phenomenon under investigation.

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<sup>17</sup> Bhopal, *Ibid.* at 36.

<sup>18</sup> *Ibid.*

Epidemic theory defines population intensionally as a set or class of individuals.<sup>19</sup> An intensional definition is one whereby set membership is defined by a shared property, rather than by their enumeration.<sup>20</sup> Thus, “ $P$  is the set of all legal positivists” is an intensional definition, whereas “ $P = \{\text{Hobbes, Bentham, Austin, Hart, etc.}\}$ ” is an extensional definition. In epidemiology, we can say that the shared properties that determine an individual’s membership in the population are defined by the population profile. Epidemic theory, on the other hand, is more concerned with populations *as such* rather than any particular population. It is likewise concerned with general problems of epidemics rather than any particular epidemic.

It was the attempt to address one of these general problems in the 1920s that yielded the definition of population that has since served as the foundation of epidemic theory. The problem was set out in 1927 by William Kermack and Anderson McKendrick in the following terms:

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<sup>19</sup> In set theory – a branch of mathematical logic – a “set” is any collection of objects, including collections whose elements are themselves sets. Many early set theorists, such as Gregor Cantor and Bertrand Russell made no distinction between “sets” and “classes”. However, such an approach leads to number of paradoxes. So-called axiomatic set theory strictly defines a “class” as a collection of sets definable by a single shared property and stipulates that all sets are classes but not all classes are sets (in which case we refer to a “proper class”). See generally, Azriel Levy, *Basic Set Theory* (Berlin: Springer-Verlag, 1979). For the purposes of this chapter, when I refer to a set, I mean a collection of objects and when I refer to class, I mean a collection of sets.

<sup>20</sup> See Bertrand Russell, *The Principles of Mathematics* (New York: Norton, 1996) at 66-67.

One (or more) infected person is introduced into a community of individuals more or less susceptible to the disease in question. The disease spreads from the affected to the unaffected by contact infection. Each infected person runs through the course of his sickness, and finally is removed from the number of those who are sick, by recovery or by death. The chances of recovery or death vary from day to day during the course of his illness. The chances that the affected may convey infection to the unaffected are likewise dependent upon the stage of the sickness. As the epidemic spreads, the number of unaffected members of the community becomes reduced. Since the course of an epidemic is short compared with the life of an individual, the population may be considered as remaining constant, except in as far as it is modified by deaths due to the epidemic disease itself. In the course of time the epidemic may come to an end. One of the most important problems in epidemiology is to ascertain whether this termination occurs only when no susceptible individuals are left, or whether the interplay of the various features of infectivity, recovery and mortality, may result in termination, whilst many susceptible individuals are still present in the unaffected population.<sup>21</sup>

Due to the complexities involved in the general problem, Kermack and McKendrick proposed a simplified model (called the SIR model or the Kermack-McKendrick model).<sup>22</sup> In this model, the population is defined as a class  $\mathcal{N}$  containing three disjoint<sup>23</sup> sets of individuals: susceptibles (S), infectives (I) and re-

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<sup>21</sup> William O. Kermack & Anderson G McKendrick, "A Contribution to the Mathematical Theory of Epidemics" (1927) 115:772 Proc. Royal Soc. London. A. 700.

<sup>22</sup> Kermack and McKendrick's model has been extremely influential and thus there are many derivations of it based on the basic categories of susceptibles, infectives, and removeds. For clarity, I will refer to the very simple version initially proposed as the Kermick-McKendrick model. Conversely, by SIR model, I mean any model that is based on these three categories, including the more refined versions that add variables.

<sup>23</sup> The sets are disjointed in that no member of any one set is a member of the other two.

moveds (R).<sup>24</sup> The spread of an epidemic can thus be described in terms of the number of members of each set, plotted through time. Though the problem for which the Kermack-McKendrick model was initially created has been solved,<sup>25</sup> their basic description of a population for the purposes of epidemic theory remains relevant.

One advantage of the adoption of the SIR model is that it is clearly applicable to the spread of phenomena other than diseases. An early literature review of attempts to generalize the SIR model describes its field of application as follows:

We are concerned with deterministic and stochastic models for the spread of some “infectious” or “contagious” phenomenon through a population as a function of time. This comprises not only the transmission of a pathogenic agent from an infected host to an uninfected susceptible, with or without an intermediate animal vector, but also the propagation of ideas, rumours and consumers’ goods.<sup>26</sup>

My contention is that the conception of the spread of an infectious phenomenon through a population evoked here may be applied to legal norms. In the following

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<sup>24</sup> Kermack & McKendrick, *supra* note 21. See also Paul Waltman, *Deterministic Threshold Models in the Theory of Epidemics* (Berlin: Springer-Verlag, 1974) at 1-2. A different, but equivalent formulation of the population in the SIR model is that it is a set  $\mathcal{N}$  of individuals each of which may be in one of a set of states  $\sigma$  (susceptible, infected and removed). See William A. Goffman & Vaun A. Newill, “Communication and Epidemic Processes” (1967) 298:1454 Proc. Royal Soc. London. A 316 at 316-17.

<sup>25</sup> The solution is set out in David G. Kendall, “Deterministic and Stochastic Epidemics in Closed Populations” (1956) 4 Proc. 3<sup>rd</sup> Berkeley Symp. Math. Statist. & Prob. 149 at 151-155. Kendall’s solution allows for an epidemic curve to be traced for any initial values of  $\mathcal{N}$  (population size) and  $I$  (number of infectives). He demonstrates that for many of these values, an epidemic will in fact cease before the number of susceptibles is exhausted. For a discussion of Kendall’s solution and a comparison with Kermack and McKendrick’s earlier approximate solution, see Norman T. J. Bailey, *The Mathematical Theory of Epidemics* (London: Griffin, 1957).

<sup>26</sup> Klaus Dietz, “Epidemics and Rumours: A Survey” (1967) 130:4 J. Royal Stat. Soc. A 505.

section we therefore turn to a detailed overview of the notions of infection and contagion as they used in epidemiology and epidemic theory.

### 3. Infection, Contagion and Spread

An adequate description of the spread of a contagious phenomenon through a population mobilizes a number of distinct concepts from the fields of epidemiology and epidemic theory. In its most abstract formulation, we can say that an epidemic is the transmission of an agent to or between members of a population. This subsection will flesh out this formulation and explore the concepts of “agent” and “transmission” that it relies upon.

#### 3.1. Agents and Pathogens

Epidemiology generally defines an agent as that which causes the condition under observation<sup>27</sup> (also called the “etiological agent”<sup>28</sup>). For instance, the agent of cholera is the bacterium *Vibrio cholerae* and the agent of (one form of) malaria is the protozoan *Plasmodium falciparum*. Since epidemiology is largely concerned with dis-

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<sup>27</sup> In the case of diseases thought to be caused by a micro-organism, the agent of infection is often informed by the postulates set out in Robert Koch, *Investigations Into the Etiology of Traumatic Infective Diseases*, trans. by W. Watson Cheyne (London: The New Sydehema Society, 1880), namely that (1) the putative agent must be found in abundance in all organisms suffering from the disease, (2) it can be isolated and grown in pure culture, (3) it causes the disease when introduced into a healthy organism, and (4) it can be re-isolated from the organism into which it was introduced and found to be identical to the original putative agent. These postulates are used as guidelines, but have been relaxed, given that (2) is not always feasible for unknown micro-organisms (see *e.g.* Lary Walker, Harry LeVine & Mathias Jucker, “Koch's Postulates and Infectious Proteins” (2006) 112 *Acta Neuropathologica* 1), and (3) rules out subclinical carriers (see *e.g.* V. Jacomo, P.J. Kelly & D. Raoult, “Natural History of Bartonella Infections (an Exception to Koch's Postulate)” (2002) 9:1 *Clinical and Diagnostic Laboratory Immunology* 8 at 16).

<sup>28</sup> See *e.g.* Lilienfeld & Lilienfeld, *supra* note 7 at 48-50.

ease, the term “pathogen” (that is “an agent causing disease”)<sup>29</sup> is often used interchangeably with “agent”.

As I noted above, I am particularly interested in *infectious* agents, that is, agents that may spread within a population by a mechanism of contagion. Infectious agents are generally associated with micro-organisms, such as bacteria or viruses;<sup>30</sup> indeed, some epidemiologists use the terms “agent” and “pathogen” as shorthand for “pathogenic micro-organism”.<sup>31</sup> Strictly speaking, a pathogenic agent isn’t *necessarily* a micro-organism; it may also be an excess or deficiency in nutritive elements, a chemical such as a poison or allergen, or a physical process as in the case of radiation.<sup>32</sup> Furthermore, agents that are not micro-organisms may be transmitted between members of a population. For instance – as anyone who is significantly allergic to cats can attest – allergens may stick to hair and skin and then be transmitted to another person. But these are marginal cases and generally pathogenic agents that are transmitted among members of a population are micro-organisms. I therefore propose to use the term “agent” in a sense that is consonant with “pathogenic micro-organism” or, more generally, “a transmissible cause of a phenomenon observed in a population.” We can thus refer to infected

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<sup>29</sup> *The Oxford Encyclopedic Dictionary*, s.v. “pathogen”.

<sup>30</sup> Infectious proteins, such as prions, are an exception. See Walker, LeVine & Jucker, *supra* note 27.

<sup>31</sup> See e.g. the definitions of “pathogen” in the glossaries of Bhopal, *supra* note 7 at xxv (“[a]n organism (usually reserved for micro-organisms) that causes disease”) and John J. McKelvey, Bruce F. Eldridge & Karl Maramorosch, eds., *Vectors of Disease Agents* (New York: Praeger, 1981) at 197 (“[a] specific causative agent (as bacterium or virus) of disease”). This is also part of common usage, see e.g. *The New Oxford American Dictionary*, 2<sup>nd</sup> ed., s.v. “pathogen” (defined as “a bacterium, virus or other micro-organism that can cause disease”).

<sup>32</sup> This list is drawn from Lilienfeld & Lilienfeld, *supra* note 7 at 49.

members of a population as “hosts” and a population containing susceptibles and infectives as a “host population”.

On a side-note, I should point out that what counts as an agent and what counts as its transmission in the context of a specific population may depend on the perspective of the researcher. For instance from one perspective, cigarettes could be seen as a mechanism whereby carcinogenous agents are transmitted.<sup>33</sup> An equally valid perspective is that cigarettes are themselves the agents of lung cancer.<sup>34</sup> The difference here is one of granularity in the analysis of causation,<sup>35</sup> rather than a predetermined definition of “agent”.

My working definition of “agent” appeals to the notion of transmission between members of a population. It is to this notion that we now turn.

### 3.2. *The Basic Concept of Transmission and Typologies of Transmission*

The basic concept of transmission is the passing on of an agent from one member of a population to another. In terms of the Kermack-McKendrick model, an agent is transmitted when a member of  $I$  has the kind of contact with a member

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<sup>33</sup> See *e.g. ibid.* at 121.

<sup>34</sup> See *e.g.* Bhopal, *supra* note 7 at 108.

<sup>35</sup> Saying that overcrowding and malnutrition are causes of tuberculosis is as valid as saying that tuberculosis is caused by the *tubercle* bacillus. The designation of the latter as the agent is purely a matter of conventional definition. See Bhopal, *ibid.* at 103-104.



of  $S$  such that she subsequently becomes herself a member of  $I$ .<sup>36</sup> Let us call the kind of contact necessary “effective contact”.

Though infectious diseases are often classified by biologists and medical researchers on the basis of their etiological agents, epidemiology is more concerned with the characterization of their transmission.<sup>37</sup> There are two interrelated typologies that classify the transmission of infectious agents: first by the *mode* (or mechanism) of transmission and second by the *pattern* of transmission.<sup>38</sup> I will first describe the major modes of transmission and the relationship between them. In the subsequent subsection I will describe the major patterns of transmission, with some reference to how those patterns relate to the different modes of transmission.

### 3.3. *Modes of Transmission*

This subsection is concerned with the mode of transmission. In classifying infectious diseases by their mode of transmission, we are interested in the mechanism whereby the etiological agent passes from one member of the population to another.

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<sup>36</sup> Or, to use the alternative terminology, the kind of contact between a member of  $\mathcal{N}$  whose  $\sigma$ -state is infective and a member of  $\mathcal{N}$  whose  $\sigma$ -state is susceptible, such that the latter’s  $\sigma$ -state changes to infective. See *supra* note 23.

<sup>37</sup> Lilienfeld & Lilienfeld, *supra* note 7 at 48.

<sup>38</sup> Paul E. M. Fine, “Epidemiological Principles of Vector-Mediated Transmission” in John J. McKelvey, Bruce F. Eldridge & Karl Maramorosch, *eds.*, *Vectors of Disease Agents* (New York: Praeger, 1981) 77.

### 3.3.1. *Direct Transmission of Agents*

As its designation suggests, direct transmission is the least circuitous form of agent transfer. It is commonly effected by physical or aerosol contact between members of the population. Many diseases can spread by several different forms of direct contact, as is the case with influenza, which can spread through droplets containing the causative virus (sneezing and coughing) as well as through physical contact (handshaking and kissing).<sup>39</sup> Direct transmission of a disease agent between members of a human population is also referred to as “person to person” transmission.<sup>40</sup>

### 3.3.2. *Indirect and “Common Reservoir” Transmission of Agents*

Indirect transmission occurs when the disease agent is transferred from one member of the population to another mediated by an object (called a fomite<sup>41</sup>). An example of fomite transmission is the spread of the viruses responsible for influenza by doorknobs or other nonporous plastic or metal surfaces.<sup>42</sup>

“Common reservoir” transmission occurs when members of the population are infected through contact with an object or site contaminated by the agent. An

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<sup>39</sup> This definition of simple direct transmission is adapted from Fine, *ibid.* at 81. Note that the SIR model can be modified to allow for other forms of transmission. For instance, transmission through an intermediate host can be integrated into the SIR model using the notion of “vectorial capacity”. Thus, “effective contact” (the probability that two members of  $N$  have the kind of contact necessary for transmission) is cached out as “the probability that a given susceptible receives at least one of the infective bites ultimately delivered by those vectors feeding upon an infected host at one time” (83-85).

<sup>40</sup> Bhopal, *supra* note 7 at xxv.

<sup>41</sup> “[O]bjects or materials that are likely to carry infection, such as clothes, utensils, and furniture.” *The New Oxford American Dictionary*, 2<sup>nd</sup> ed., *s.v.* “fomite”.

<sup>42</sup> B. Bean *et al.*, “Survival of Influenza Viruses on Environmental Surfaces” (1982) 146:1 *Journal of Infectious Diseases* 47.

example of a common reservoir is a body of warm stagnant water in which Legionnaire's disease is found.<sup>43</sup>

Though the categories overlap, for analytic purposes we can make a distinction between fomites that act as mere surrogates for direct contact and "true" common reservoirs.<sup>44</sup> In the first case, the infectious agent can be spread through direct contact and just happens to "stop off for a moment" on a fomite. In the latter case, the infectious agent is not contagious in the sense that it cannot be transmitted directly from host to host; it *resides* in a common reservoir where it emerges.<sup>45</sup>

Indirect and common reservoir modes of transmission can be combined with simple direct transmission among members of the host population. In the case of cholera, for example, some members may be infected by their contact with a common reservoir such as a contaminated well, whereas others may be infected through direct or indirect contact with infectives.

### 3.3.3. *Vector-mediated Transmission of Agents*

The mathematical concept of a vector refers to a quantity having both a magnitude and a direction. When applied to disease transmission, the term "vector"

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<sup>43</sup> R. R. Muder, V. L. Yu & A. H. Woo, "Mode of Transmission of Legionella Pneumophila. A Critical Review" (1986) 146:8 Archives of Internal Medicine 1607.

<sup>44</sup> Some authors refer to such common reservoirs as "common vehicles". See *e.g.*, Lilienfeld & Lilienfeld, *supra* note 7 at 48-49.

<sup>45</sup> This is the case with legionella. See V. L. Yu *et al.*, "Lack of Evidence for Person-to-Person Transmission of Legionnaires' Disease" (1983) 147:2 Journal of Infectious Diseases 362.

may be used to describe “...any agent of pathogen transfer”.<sup>46</sup> Thus, we could say that one vector of influenza transmission is fomites and another is aerosol droplets. More often, however, when epidemiologists refer to the vector-mediated transmission of disease agents, they are using “vector” as a shorthand for “secondary host”.<sup>47</sup> This conforms to colloquial usage,<sup>48</sup> and I will follow this convention hereafter unless the context clearly indicates otherwise.

A secondary host is a member of a species other than the species of the host population under study (which can then be called the “primary host”). For example, the virus that causes Dengue fever is transmitted from human to human by the *Aedes aegypti* mosquito, which we can call both the vector and the secondary host.<sup>49</sup>

Denominating the primary and secondary hosts is a matter of convention. Often, epidemiologists are concerned with the distribution and spread of disease across *human* populations, the members of which are therefore dubbed the primary hosts.<sup>50</sup> Whatever other species (for example arthropods, rats, bats, *etc.*) acts as a

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<sup>46</sup> McKelvey, Eldridge & Maramorosch, *supra* note 38 at 199 (glossary). The use of the term “agent” is unfortunate here, as it invites confusion with the notions of etiological agent and pathogen. A better formulation would be “*vehicle* of pathogen transfer”.

<sup>47</sup> Commonly an arthropod in the case of animal viruses. For plant viruses, the secondary hosts designated by “vector” are insects, mite, nematodes (i.e. roundworms) and lower fungi. *Ibid.*

<sup>48</sup> See *The New Oxford American Dictionary*, 2<sup>nd</sup> ed., *s.v.* “vector” (“an organism, typically a biting insect or tick, that transmits a disease or parasite from one animal or plant to another”). But see *The Oxford Encyclopedic Dictionary*, *s.v.* “vector” (“a carrier of disease”).

<sup>49</sup> See McKelvey, Eldridge & Maramorosch, *supra* note 38 at 192, 195, 197-98.

<sup>50</sup> The study of the distribution and spread of disease in animal populations is often referred to as “veterinary epidemiology” though “epizootology” is etymologically more correct.

vector of transmission is then designated as the secondary host. There is nothing necessary about this designation. An entomologist whose research objective is to study the spread of a malaria virus across a population of mosquitos would be perfectly justified in claiming that humans are the secondary host that serves as a vector of transmission among mosquitos, which are the primary hosts.

One might designate the primary and secondary hosts on the basis of disease etiology or the reproductive cycle of the infectious agent. If an infectious agent causes disease in one species but not in another, we could rely on this fact as a justification for calling the former the primary host species and the latter the secondary host species. Similarly, if the agent is a micro-organism that only reaches sexual maturity in one species and thus does not reproduce inside the bodies of the members of a second “carrier” species, the designations of primary and secondary respectively could be justified on these grounds.<sup>51</sup> Unfortunately, nature does not provide us with such neat categories and reliance on disease etiology or pathogen reproductive cycle would not obviate the need for a stipulative definition. Such a definition would be required, *inter alia*, in cases – such as that of the Avian Influenza A (H5N1) virus<sup>52</sup> – where the infectious agent is a pathogenic micro-

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<sup>51</sup> Some epidemiologists use the term “intermediate host” to designate species that carries the disease agent in a state of sexual immaturity. The obverse of “intermediate host” is the “definitive host” (*i.e.* the host in which the sexually mature – and thus reproducible – pathogen is found). Though most often the intermediate host is the secondary host and the primary host is the definitive host, this is not always the case. For example, the primary host of the viruses that cause malaria is human beings, but their definitive host is the *Anopheles* mosquito. See McKelvey, Eldridge & Maramorosch, *supra* note 38 at 197-98.

<sup>52</sup> The Writing Committee of the Second World Health Organization Consultation on Clinical Aspects of Human Infection with Avian Influenza A Virus, “Update on Avian Influenza A (H5N1) Virus Infection in Humans” (2008) 358:3 N. Engl. J. Med. 261.

organism capable of reproducing in multiple species, more than one of which exhibits symptoms of infection.

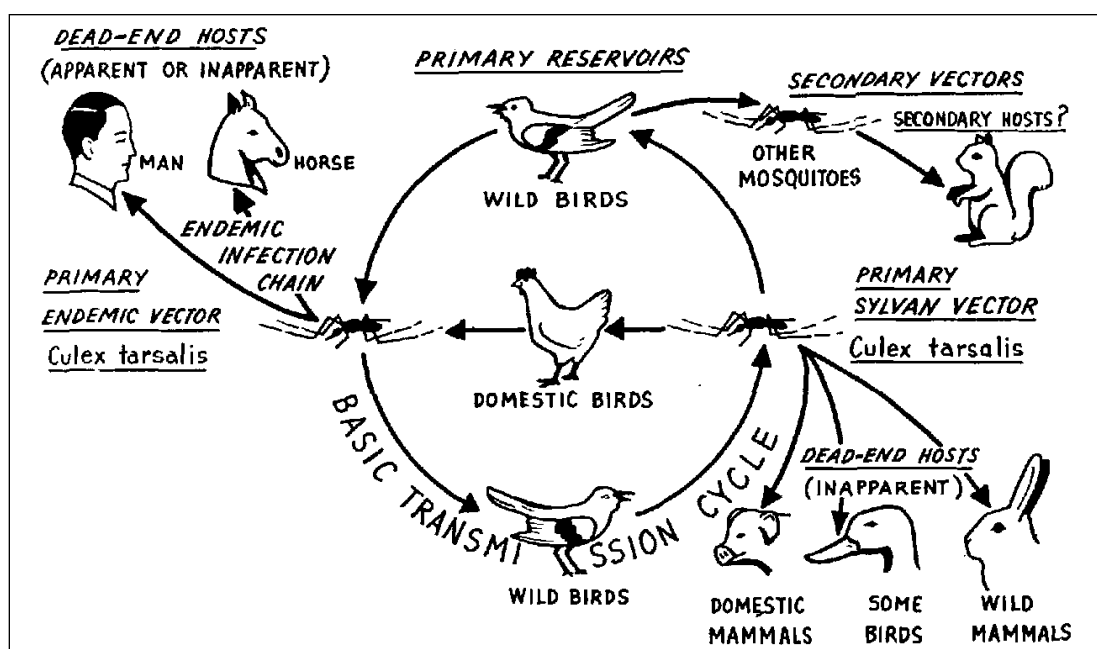
#### *3.3.4. Complex Transmission of Agents*

The typology of modes of transmission that I have set out thus far provides a useful shorthand for describing how infectious agents come into contact with members of a population. It is, however, a construct, and as I have noted, the characterization of a mode of transmission depends in large part on the objectives of the researcher. The transmission of hantaviruses – which can cause fatal pulmonary disorders in humans – provide a useful example. Hantaviruses are generally transmitted to humans by rodents, with the usual route of infection being contact with rodent droppings, which emit the virus in aerosol form when disturbed.<sup>53</sup> How should this infection route be categorized? Certainly it looks like a good candidate for vector-mediated transmission, with rodents being the secondary (or vector) population. Yet the mechanism of transmission could also be characterized as indirect, passing by fomites (the droppings). Several cases in a community might be clustered around a single location where rodents are present, a barn for example. This suggests that the mode of transmission is that of a common reservoir. There is no single “right” characterization. The typology of modes of transmission simply provides a framework for discussing the infection route.

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<sup>53</sup> Centre for Disease Control, “Update: Hantavirus Pulmonary Syndrome - United States, 1999” (1999) 48:24 Morbidity and Mortality Weekly Report 521.

Furthermore, few infectious agents are transmitted by a single mode. The examples I gave above of direct and indirect transmission of the influenza virus and of the common reservoir and direct transmission of cholera are the rule rather than the exception. Yet even these examples are simplifications; empirical investigations of the spread of disease will often identify many different modes of transmission. Figure 3-1 – which shows the transmission routes for one of the viruses that causes encephalitis in humans – illustrates how multiple modes of transmission can be involved in the propagation of a single disease.<sup>54</sup>



*Fig. 3-1. An example of complex modes of transmission: the summer infection chains for western equine encephalitis.*

<sup>54</sup> Reproduced from A. D. Hess & P. Holden, "The Natural History of the Arthropod-Borne Encephalitides in the United States" (1958) 70:3 *Annals of N.Y. Acad. of Sciences* 294 at 297. A modified version of the same figure appears in Lilienfeld & Lilienfeld, *supra* note 7 at 52. Hess and Holden describe (at 294) the species that serve as vectors for other populations as "reservoirs" and those that do not as "dead-end hosts". The species are also divided into primary and secondary.

In this figure, two types of populations (wild and domestic birds) are considered part of a reservoir. From this reservoir, the virus is transmitted by arthropod vectors to other populations, which are defined as secondary hosts. The primary hosts are horses and humans. Each of these *modes* of transmission may also have a distinct *pattern* of transmission. That is the subject of the following section.

### 3.4. *Patterns of Transmission*

A good grasp of a pathogen's mode of transmission is an important factor in understanding the dynamics of its distribution and in formulating action to control it. For example, the knowledge that mosquitos are the primary vector of malaria transmission is the basis for policies of mosquito eradication and the use of bed-nets in reducing human infection rates.<sup>55</sup> But the mode of transmission is not the only characteristic of disease that allows us to understand and affect its distribution. Another important factor used by epidemiologists to understand the dynamics of the spread of infectious disease agents is the *pattern* of transmission.

#### 3.4.1. *Horizontal and Vertical Patterns of Transmission*

One classic dichotomy used to classify transmission by pattern is between *horizontal* and *vertical* transmission. Horizontal transmission (also called “serial host transfer”) is characteristic of the spread of infectious agents that can be transmitted between any two members of the population; or rather – to be more precise – from

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<sup>55</sup> For an overview, see C. A. Goodman & A. J. Mills, “The Evidence Base on the Cost-Effectiveness of Malaria Control Measures in Africa” (1999) 14:4 Health Policy Plan. 301.



any infective to any susceptible. In contrast, the vertical pattern of transmission “implies transfer from a parent organism to his or her progeny.”<sup>56</sup>

Direct transmission is often horizontal in its pattern. One’s risk of getting the flu through aerosol droplets when somebody sneezes has nothing to do with the question of whether the sneezer is your parent.<sup>57</sup> Similarly, indirect transmission is horizontal in that it spreads across a population; with the distinction that a fomite may come into contact with many more members of the population than an individual host. An infected doorknob in a high-traffic area is like shaking the hands of hundreds of people!

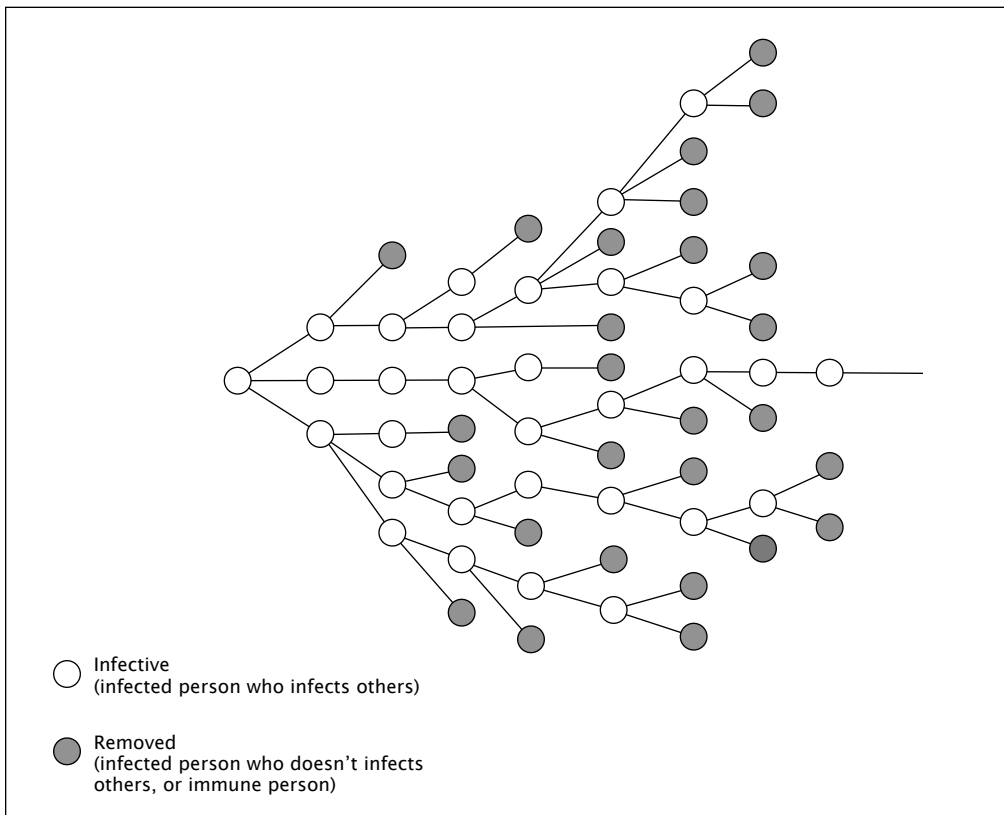
Though many cases of direct and indirect transmission are horizontal, there is no necessary connection between the mode of transfer and its pattern of spread. It is possible for agents that spread by direct transmission to do so in a largely or even exclusively vertical pattern. This is the case, for example, with transovum, transplacental and transmammary infection routes in mammals and with seed-borne infections in plants. Of course, all hereditary diseases are – by definition – vertically transmitted.

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<sup>56</sup> Fine, *supra* note 38 at 77.

<sup>57</sup> The probability of effective contact between parents and children may be higher than between any two random members of the population. But this is only because parents and children are more likely to live together.

Both horizontal and vertical transmission exhibit a “tree” pattern; every infective is a branch and each susceptible who comes into contact with an infective becomes either a dead-end or a new branch, as illustrated in Figure 3-2.<sup>58</sup>



*Fig. 3-2. Branching pattern of serial-transfer transmission*

It is readily apparent how this figure illustrates both horizontal and vertical transmission. Let us suppose that the hypothetical epidemic illustrated is a horizontally transmitted disease that can only be transmitted by kissing. The first infected member kisses three susceptibles, each of whom becomes infected and passes the disease on by further kissing. The people kissed either go on to infect

<sup>58</sup> Adapted from Lilienfeld & Lilienfeld, *supra* note 7 at 51, citing M. Burnet & D. O. White, *Natural History of Infectious Disease*, 4<sup>th</sup> ed. (Cambridge: Cambridge University Press, 1972).

others by kissing (white circles) or don't (shaded circles) for whatever reason; *e.g* they do no further kissing, all of the people they kiss are immune, *etc*. The figure works equally well for a vertically transmitted disease. Say the disease is an inherited condition that only affects men. The first infected father has three sons, each of whom are infected. They go on to have sons of their own, some of whom pass it on to their sons (white circles) some of whom don't (shaded circles) for whatever reason – *e.g* they only have daughters, they don't have children, *etc*.

The SRI model is predicated on serial host transmission; effective contact is presumed to be possible between any infective and any susceptible. How this is modelled mathematically will depend on the nature of the population. In some populations it is reasonable to assume homogenous mixing. In a homogeneously mixing population, the probability of any given infective coming into contact with any given susceptible is constant.<sup>59</sup> Consequently, the model required to predict cumulative incidence<sup>60</sup> – and thus the rate of spread – is deterministic, and changes in the population are described using differential equations.<sup>61</sup> On the other hand, a model applicable to populations that mix heterogeneously will be probabilistic and changes in the population described using stochastic processes.<sup>62</sup>

A heterogeneously mixing population is one in which the probability of effective

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<sup>59</sup> “This is reasonable if the population consists of students in a school where changing classes, attending athletic events, etc., mix the population. It would not be true in an environment where socio-economic factors have a major influence on contacts” (Waltman, *supra* note 24 at 2).

<sup>60</sup> Cumulative incidence is “...the proportion of individuals in the disease-free state at the beginning of the period that move to the disease state during the period.” See Ahlbom & Norell, *supra* note 7 at 6.

<sup>61</sup> Waltman, *supra* note 24 at 1. See also Lilienfeld & Lilienfeld, *supra* note 7 at 356-58.

<sup>62</sup> Waltman, *ibid*.

contact between a given infective and a given susceptible varies. This is generally the case in very small or very large populations.<sup>63</sup> For instance, say the population under study is residents of Canada: clearly, an infective in Alberta is much more likely to come into contact with a susceptible in Alberta than one in Newfoundland.

Vertically transmitted diseases – whether inherited or directly transmitted – can most often be described using deterministic models similar to mendelian genetics. *Ceteris paribus*, the probability of any given parent transmitting the condition to any given offspring is constant.

#### 3.4.2. *Common Reservoir Pattern of Transmission*

The patterns of horizontal and vertical transmission can also be distinguished from the pattern of common reservoir transmission. Here we can see that though mode of transmission and pattern of transmission are distinct, in some cases they are connected. As I explained above, “true” common reservoir epidemics refer to the mode of transmission; that is how susceptibles come into contact with the pathogenic agent. In these cases, the agent is infectious in the sense that susceptibles who come into contact with it may develop the disease, but it does not *spread* across a population. Consequently, common reservoir epidemics are associated

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<sup>63</sup> Dietz, *supra* note 26 at 507-509. For a treatment of the mathematical difficulties involved in stochastic epidemics, see Kendall, *supra* note 25.

with high localization of infections; for instance as in the case of a food poisoning outbreak.<sup>64</sup>

Though epidemics caused by disease agents whose *mode* of transmission is that of a common reservoir generally also exhibit the common reservoir *pattern* of transmission, this connection is not necessary. The common reservoir pattern can also be seen in epidemics with other modes of transmission, such as fomite transfer. For instance, the mode of transmission of Typhoid fever is often spread by fomites such as contaminated food.<sup>65</sup> However, Typhoid transmission may follow a common reservoir pattern, as in the case of a restaurant in which the cook is infected.<sup>66</sup> Similarly, though malaria is a paradigmatic case of a vector transmitted disease, in some cases its pattern may exhibit characteristics of a common reservoir. This might be the case, for example, where a single stagnant body of water in an otherwise arid region provides the only breeding ground for mosquitos.

The branching that is typical of both horizontal and vertical transmission patterns does not adequately illustrate the dynamics of common reservoir epidemics. Instead, common reservoir patterned epidemics can be visualized as clusters of cases in space and time. A famous example of such cluster diagrams is Dr. John Snow's map of London during the 1854 cholera outbreak. Snow plotted the

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<sup>64</sup> Lilienfeld & Lilienfeld, *supra* note 7 at 50.

<sup>65</sup> The *Salmonella typhi* can also occur in "true" common reservoirs, such as infected wells.

<sup>66</sup> The example is drawn from the case of "Typhoid Mary", the first diagnosed asymptomatic infective of typhoid fever, who was forcibly quarantined for a total of 41 years after refusing to cease working as a cook. See Judith Walzer Levitt, *Typhoid Mary, Captive to the Public's Health* (Boston: Beacon, 1996).

number of confirmed cholera cases and – through observing how they clustered – identified a water pump on Broad Street as being the common reservoir.<sup>67</sup>

### 3.4.3. *Zig-Zag Pattern of Transmission*

Epidemics of diseases whose mode of transmission is vector mediated can be described as having a horizontal pattern. In this case, the vector acts as a mediator between infectives and susceptibles and occupies the role of contact between members of the population or contact with a fomite. Thus, the notion of effective contact is translated into “vectorial capacity”. In cases of disease agents whose mode of transmission is direct contact and whose pattern of transmission is horizontal, the probability of effective contact can be glossed as the probability that in one day a susceptible will have the kind of contact with an infective necessary for the disease agent to be transmitted. In vector mediated transmission described as having a horizontal pattern “...the probability of effective contact parameter becomes the probability that a given susceptible receives at least one of the infective bites ultimately delivered by those vectors feeding upon an infected host in one day.”<sup>68</sup>

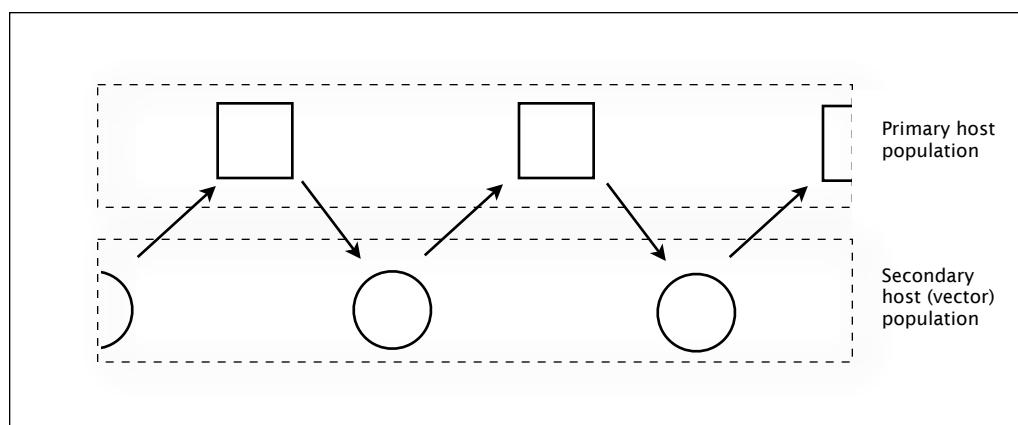
Though this translation allows for the mathematical models of horizontally patterned transmission to be applied to vector mediated transmission, it does not capture the unique pattern of vector mediated transmission. In other words,

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<sup>67</sup> John Snow, *On the Mode of Communication of Cholera*, 2nd ed. (London: John Churchill, 1855). Snow’s findings on the pattern of the cholera outbreak led him to identify its mode of transmission. He is credited with being the “father” of modern epidemiology; see *e.g.*, John G. Simmons, *Doctors and Discoveries: Lives That Created Today's Medicine* (Boston: Houghton Mifflin, 2002).

<sup>68</sup> Fine, *supra* note 38 at 85.

though an epidemic caused by a disease agent whose mode of transmission is vector mediated can be modelled such that it “fits” the branching tree in Figure 3-1, this does not illustrate the particular dynamics such an epidemic. A truer illustration of the spread of an agent between the primary and secondary host populations follows a zig-zag pattern,<sup>69</sup> as illustrated in Figure 3-3.<sup>70</sup>



*Fig 3-3. Zig-zag pattern of simple vector mediated transmission.*

This figure illustrates “simple” vector mediated transmission in that it assumes that there is only one route by which the disease agent spreads. The agent must pass from a member of the primary host population to a member of the secondary host population or vice versa and no serial host transfer is present. Though this an idealization,<sup>71</sup> it nevertheless captures the essential properties of

<sup>69</sup> The zig-zag pattern was first described in C. H. Andrewes, “Factors in Virus Evolution” (1957) 4 *Advanced Virus Research* 1. See also Fine, *ibid.* at 80-81.

<sup>70</sup> Adapted from Fine, *ibid.* at 78.

<sup>71</sup> See *e.g.* Figure 3-1 (An example of complex modes of transmission: the summer infection chains for western equine encephalitis), above, which shows how complex infection routes may be.

vector mediated transmission and shows how it may display a distinct pattern of transmission.

As I noted above, determining what counts as a primary host population and a secondary host population (that is, a vector) is a matter of *a priori* designation, rather than the inherent properties of the populations themselves.<sup>72</sup> In other words, if we look at Figure 3-3, which species is represented by the square and which species is represented by the circle is purely conventional.<sup>73</sup> Furthermore, the zig-zag transmission pattern can be observed within sub-populations of a given species:

...[V]eneral transmission, which at first appears to be a straightforward mode of horizontal transfer, has, at least in heterosexual societies, a distinctly zig-zag pattern, the infectious agent moving through a population by alternating between separate subpopulations of males and of females. Either the male or the female may be considered the “vector” and the other the “host,” according to one’s prejudice.<sup>74</sup>

This example reveals not only that the designation of primary and secondary host populations is a matter of convention, but that the characterization of the pattern of transmission may affect how we conceive of the mode of transmission. The propagation of venereally transmitted diseases is usually considered a paradigm

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<sup>72</sup> See text accompanying note 50.

<sup>73</sup> Although the reproductive cycle of the pathogen may provide additional reasons to opt for designating one or the other of the host populations as being primary.

<sup>74</sup> Fine, *supra* note 38 at 81.



case of direct transmission between members of a human population, but as the example above illustrates, it can easily be described as vector mediated.

### 3.5. *Transmission Over Time*

Both the mode of transmission and the pattern of transmission can only be understood as occurring across time. Regardless of the mode of transmission, it is axiomatic that for a member of a population to be infected, she must have had effective contact (with an infective, a vector, a fomite, *etc.*) *before* she became an infective. Similarly, a pattern of transmission can only be identified by observing the change in the status of susceptibles and infectives over time. This is not some special feature of epidemiological reasoning; it is simply a statement that “causation follows time’s arrow.”<sup>75</sup> However, not all epidemiological models take into account all the time-dependant factors involved in disease transmission. My purpose in this subsection is not to survey all such factors. Instead, I limit myself to a basic explanation of what are called “epidemiological epochs” (which cover some of the time-dependant factors in individual transmission) and “epidemic curves” (which illustrate the rate of infection over time).

### 3.6. *Epidemiological Epochs*

Among the simplifying assumptions that the Kermack-McKendrick model proposes in order to make the problems that it seeks to address mathematically tractable is that transmission is instantaneous. In other words, it assumes that a mem-

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<sup>75</sup> This is a common formulation of the statement that an effect cannot precede its cause. It was coined in Arthur Eddington, *The Nature of the Physical World* (New York: Macmillan, 1928) at 74 (“The second law of thermodynamics is time’s arrow.”)

ber of  $S$  becomes a member of  $I$  *immediately* after effective contact with another member of  $I$ . Yet, the progression of a member of  $N$  from susceptible to infective is far more complex. After contact with an infective, a member of the susceptible set may pass through a period of latency during which she is infected, but not infectious.<sup>76</sup> Thus, for example, it takes between eight and twelve hours for someone infected with a virus causing the common cold (*rhinovirus*) to begin producing more of the virus.<sup>77</sup> Furthermore, there is invariably a delay between the moment of infection and the moment that symptoms of the infection appear.<sup>78</sup> This incubation period may be shorter or longer than the latency period. That is, there may be members of the population who exhibit clinical symptoms but are not yet able to pass on the infection, or – more often – who are infectious but do not yet exhibit symptoms (called “carriers”<sup>79</sup>).<sup>80</sup> The various periods of time (epochs) of transmission are illustrated in Figure 3-4.<sup>81</sup>

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<sup>76</sup> See William A. Goffman & Vaun A. Newill, “Generalization of Epidemic Theory: An Application to the Transmission of Ideas” (1964) 204:4955 *Nature* 225 at 225 (though note that they do not make the distinction between latency and incubation periods).

<sup>77</sup> J. M. Harris & J. M. Gwaltney, “Incubation Periods of Experimental Rhinovirus Infection and Illness” (1996) 23 *Clinical Infectious Diseases* 1287.

<sup>78</sup> Lilienfeld & Lilienfeld, *supra* note 7 at 50-58.

<sup>79</sup> Carriers are also called “silent hosts”, see McKelvey, Eldridge & Maramorosch, *supra* at 198.

<sup>80</sup> Indeed, some contagious infections remain asymptomatic throughout the infectious period. For instance, 25% of those infected with Rhinoviruses never develop a cold. See J. M. Gwaltney, “Rhinoviruses” in A.S. Evans & R.A. Kaslow, eds., *Viral Infection of Humans: Epidemiology and Control*, 4th ed. (New York: Plenum Press, 1997) 815.

<sup>81</sup> Reproduced from Dietz, *supra* note 26 at 506. Note that this figure presumes that the latent period is shorter than the incubation period.

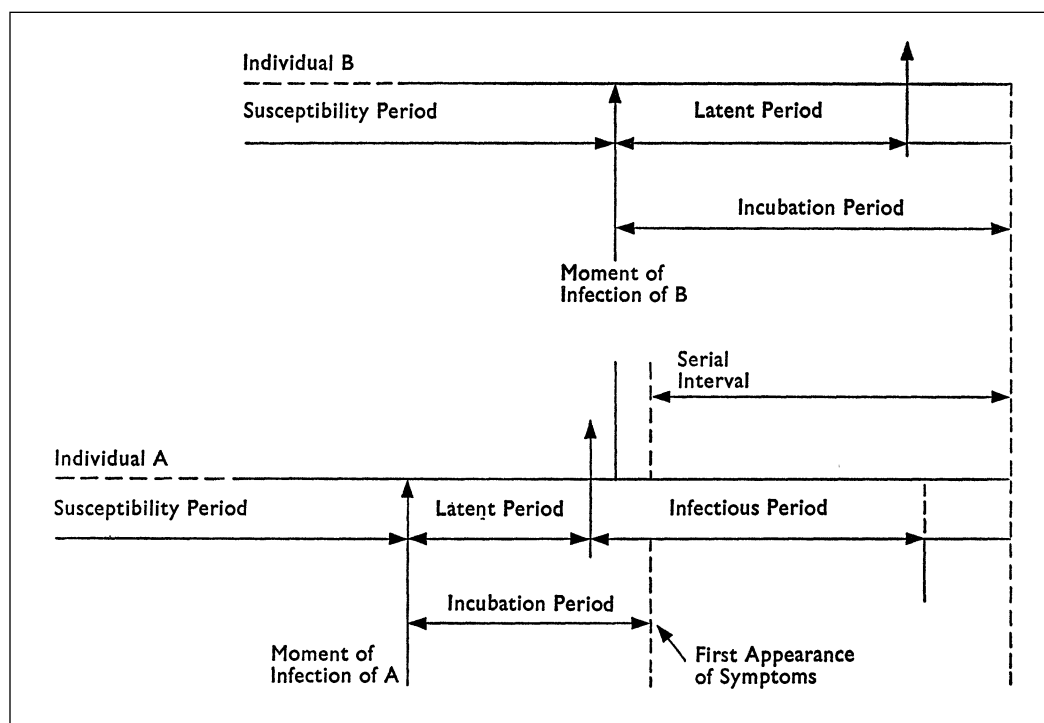


Fig. 3-4. Relations between epidemiological epochs.

The period that is relevant to epidemic theory is the latent period, since it represents the “gap” between the moment a member of  $\mathcal{N}$  is a member of  $\mathcal{S}$  and when she becomes a member of  $\mathcal{I}$ , the duration of which will have an effect on the rate of transmission.<sup>82</sup> Empirical (or “descriptive”) epidemiology, on the other hand, is more concerned with the period between the first manifestations of symptoms in  $A$  and the first manifestation of symptoms in  $B$  (the “serial interval”) since this is the observable phenomenon (*i.e.* the data) that can be used to plot the spread of a particular disease in a given population.<sup>83</sup>

<sup>82</sup> Since Kermack and MacKendrick first set out the SIR model, several modifications have been proposed to take into account of this gap. For a review, see Dietz, *ibid.* at 508-509.

<sup>83</sup> Evidently, how one cashes out the notion of symptoms will determine the length of the serial interval. A positive test for antibodies would not normally be considered a “symptom” by a clinician, but may be so considered by an epidemiologist.

### 3.6.1. Epidemic Curves

An epidemic curve is a graph in which the number of new cases of disease is plotted according to their time of onset.<sup>84</sup> When plotting actual outbreak data, epidemic curves are histograms, with the number of cases plotted along the Y-axis and the time intervals of the X-axis based on the incubation period, as in Figure 3-5.

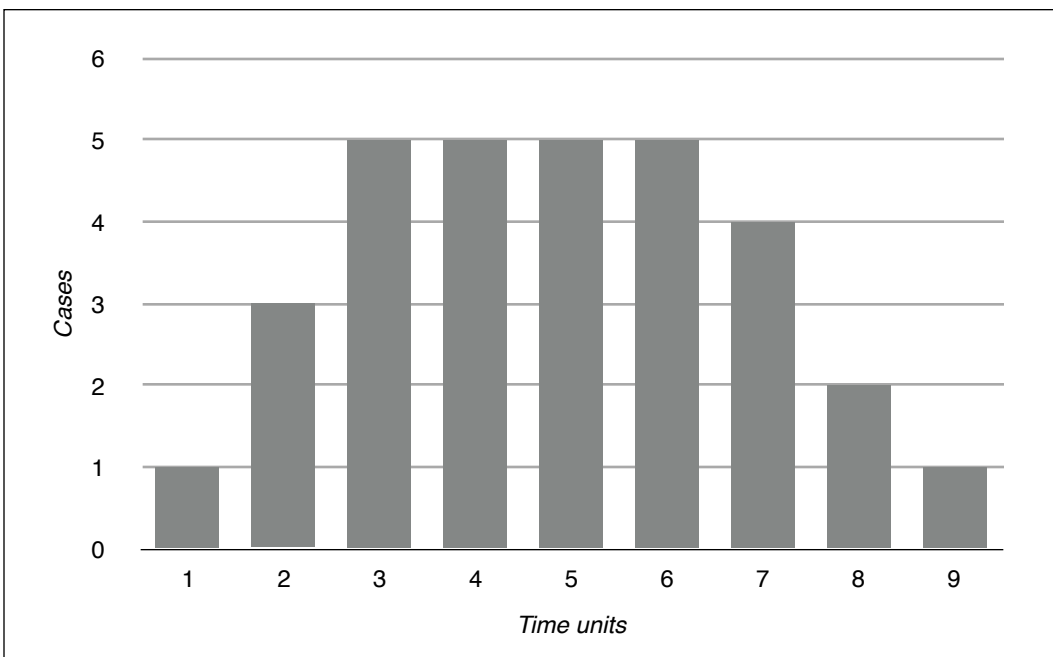


Fig. 3-5. Epidemic curve of a hypothetical disease outbreak.

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<sup>84</sup> David J. Weber, L. B. Menajovsky & Richard Wenzel, “Investigation of Outbreaks” in James C. Thomas & David J. Weber, eds., *Epidemiologic Methods for the Study of Infectious Diseases* (Oxford: Oxford University Press, 2001) 291 at 300. See also, B. Burt Gerstman, *Epidemiology Kept Simple: An Introduction to Traditional and Modern Epidemiology*, 2<sup>nd</sup> ed. (New York: Wiley-Liss, 2003) at 356-8.

In this figure,<sup>85</sup> the number of new cases increases sharply in the first three periods, stabilizes, and then drops to its initial value. Variation across time is typical of an epidemic outbreak. Indeed, it is the very definition of an epidemic: “...in the ordinary use of language an epidemic which never varied in its demand for victims would be something of a contradiction in terms.”<sup>86</sup> A histogram in which the number of new cases did not vary over time (that is, where the graph is not a curve at all, but is in fact flat) would illustrate an *endemic* condition.

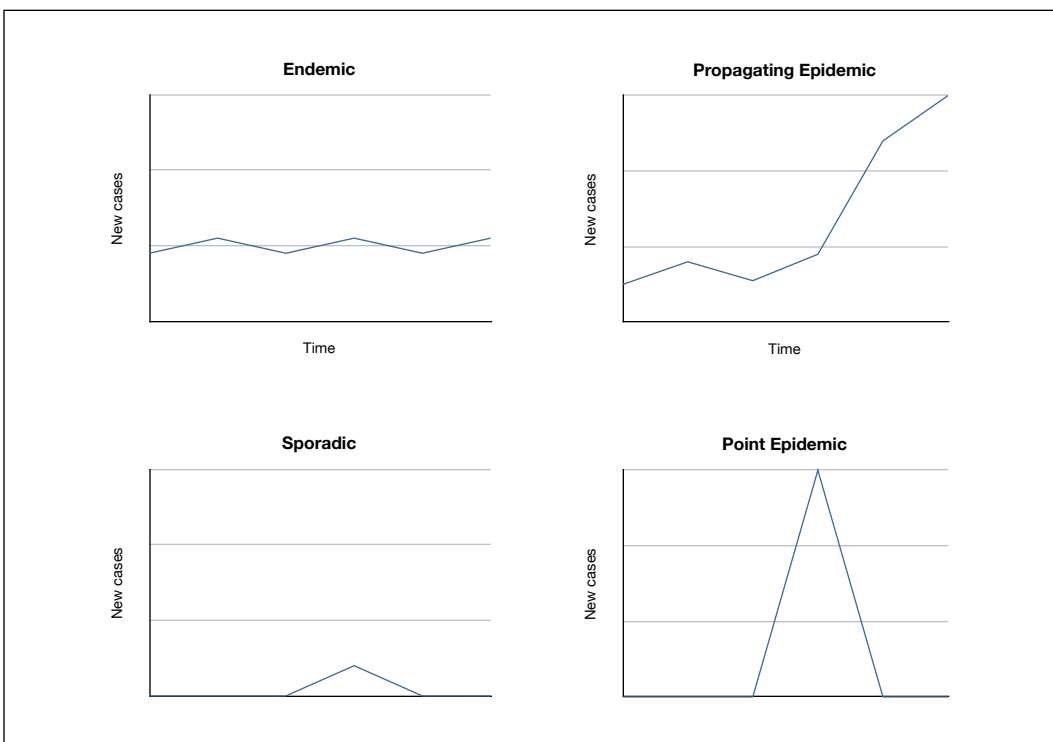
Though variation of the number of new cases across time is what typifies an epidemic curve, the *shape* of the curve depends on a number of factors, including the disease’s incubation period and its pattern of transmission. Figure 3-6 illustrates four common shapes of epidemiological curves.<sup>87</sup>

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<sup>85</sup> The data for this hypothetical outbreak is based on the branching tree diagram in Figure 3-2, with each white circle in that figure representing a new case. The time units are not indicated, as they are assumed to be the incubation period. They could vary anywhere from hours to years, depending on the nature of the condition.

<sup>86</sup> H. E. Soper, “The Interpretation of Periodicity in Disease Prevalence” (1929) 92:1 J. Royal Stat. Soc. 34. See also *The New Oxford American Dictionary*, 2<sup>nd</sup> ed., *s.v.* “epidemic” (“A disease that quickly and severely affects a large number of people and then subsides is an epidemic”).

<sup>87</sup> Adapted from Gerstman, *supra* note 84 at 53, reproduced from Calvin W. Schwabe, Hans Riemann & Charles E. Franti, *Epidemiology in Veterinary Practice* (Philadelphia: Lea & Febiger, 1977).



*Fig 3-6. Four epidemic curves.*

As mentioned above, the graph of the endemic situation is relatively flat and represents a stable incidence over time. The small fluctuations would appear to flatten entirely if we were to “zoom out” of this graph by increasing the number of intervals along the x-axis. Note that the characterization of a condition as being endemic is unrelated to the magnitude of its incidence. The endemic state is one of stability; not of low incidence.<sup>88</sup>

The curve of a propagating epidemic is associated with either serial transfer or continued exposure to a common reservoir. The number of new cases in

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<sup>88</sup> For example, in some European countries, such as Bulgaria and the Czech Republic, the incidence of Herpes Simplex Virus Type-1 infection is stable (endemic) at slightly above 80%. See R. G. Pebody *et al.*, “The Seroepidemiology of Herpes Simplex Virus Type 1 and 2 in Europe” (2004) 80:3 *Sex. Transm. Infect.* 185.

such epidemics tend either to plateau or to continue rising,<sup>89</sup> though some mathematical models show that there will always be some members of the population who avoid infection.<sup>90</sup>

The sporadic curve and point epidemic curve differ only in the intensity of the outbreaks that they illustrate. A sporadic outbreak is a small random occurrence of a disease, whereas a point epidemic is a sharp increase in incidence followed by rapid return to normal levels.<sup>91</sup> These curves are typical of localized outbreaks such as food poisoning. The first might, for instance, illustrate the number of cases of salmonella after a small picnic, whereas the latter could illustrate a widespread but short outbreak, as in the case of a listeriosis epidemic associated with contaminated food that is widely distributed.<sup>92</sup>

The shape of the epidemic curve associated with a single outbreak will vary depending on the time units used (that is, the scale of the X-axis). There is no *a priori* “right” units to use, but the time units should be appropriate to the incubation period of the disease. For example, the epidemic curve of the listeriosis outbreak mentioned above uses weeks as the units. This is clearly more appropriate than hours or years, since “[t]here is an inherent delay of two to three weeks from

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<sup>89</sup> Gerstman, *supra* note 84 at 358.

<sup>90</sup> Waltman, *supra* note 24 at 4.

<sup>91</sup> Gerstman, *supra* note 84 at 52.

<sup>92</sup> For instance, the outbreak that occurred in Canada in 2009, where packaged meats coming from a single meat processing plant resulted in 56 confirmed cases of listeriosis, including 20 deaths. Public Health Agency of Canada, *Listeria Monocytogenes Outbreak: Final Update*, online: <[http://www.phac-aspc.gc.ca/alert-alerte/listeria/listeria\\_2008-eng.php](http://www.phac-aspc.gc.ca/alert-alerte/listeria/listeria_2008-eng.php)>. For the epidemic curve of this outbreak, see Public Health Agency of Canada, *Listeriosis Epidemiological Curve*, online: <<http://www.phac-aspc.gc.ca/alert-alerte/listeria/epi-curve-courbe-eng.php>>.

the date an illness starts to the date the case is reported to public health authorities.”<sup>93</sup> The U.S. Center for Disease Control recommends that the time units used be between one-eighth and one-third of the average incubation period.<sup>94</sup> It may also be necessary to trace several curves using different units in order to generate an image that reflects the temporal pattern.<sup>95</sup> This is particularly important if the incubation period is unknown. Indeed, if the distribution of times of onset of illness (that is, what is represented by the epidemic curve) and the time of exposure are known, the incubation period can be deduced.<sup>96</sup>

Epidemic curves are also important to epidemic theory. In fact, a central project of epidemic theory is the creation of mathematical models that predict the curves of epidemics given certain initial conditions. These predictions can be then compared to actual incidence data to validate the models.<sup>97</sup> Evidently, the better the models fit past incidence data, the more they can be relied upon to generate

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<sup>93</sup> Canada, *Listeriosis Epidemiological Curve*, *ibid.*

<sup>94</sup> Centres for Disease Control and Prevention United States, *Principles of Epidemiology Self-study Course 3030-G*, 2nd ed. (Atlanta, GA: U.S. Department of Health and Human Services, 1992) at 363-4.

<sup>95</sup> Gerstman, *supra* note 84 at 356-7.

<sup>96</sup> Lilienfeld & Lilienfeld, *supra* note 7 at 52-53 (demonstrating that knowing the values of any two of these variables allows for the third to be deduced).

<sup>97</sup> See *e.g.*, Kermack & McKendrick, *supra* note 21 in which the curve generated by the classic SIR model is compared to actual data of a plague in Bombay in 1905-06. The curve generated by the model, superimposed with the empirical data from the plague, is reproduced as Figure 1.2 in Waltman, *supra* note 24 at 8.



hypotheses related to future epidemics, keeping in mind that it is unlikely such models will ever *entirely* explain a given epidemic.<sup>98</sup>

#### 4. Conclusion

This chapter has seen us take a rather whirlwind tour of some basic concepts of epidemiology and epidemic theory. This exercise is bound to have left many readers unsatisfied. On one hand, an epidemiologist could – quite rightly – claim that the survey I provided is incomplete and somewhat oversimplified. I have emphasized concepts that may prove useful for an analysis of the spread of legal phenomena, while giving short shrift to some of the finer details, notably with regard to the mathematics of epidemic theory. On the other hand, jurists may find my overview somewhat technical and detail-laden. They may wonder what slogging through the subtleties of disease propagation tells us about the law.

In response to these potential criticisms, I can only claim that they are an inevitable consequence of my model-building methodology. To the epidemiologist unsatisfied by my simplified introduction to epidemiology, I would reply that my objective was not to do an in-depth analysis of the current state of epidemiology as a science, nor to exhaustively enumerate its concepts. I have neither the training nor the inclination to do either of these. Instead, my purpose was to get enough of the conceptual apparatus of epidemiology “on the table”, as it were, to

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<sup>98</sup> Edwin B. Wilson & Mary H. Burke, “The Epidemic Curve” (1942) 28:9 Proceedings of the National Academy of Sciences of the U.S.A. nited States of America 361 at 362 (claiming that models “cannot be expected to explain in quantitative detail the course of any epidemic” and that “[t]he greatest immediate value of the development of theory and of attempts at its application to concrete instances must be upon the qualitative side...”).

begin a discussion of what an epidemiological model of law would look like. To the jurist who claims that I have gone into too much detail, I would reply that a certain level of detail is necessary: if we are going to assert that legal norms spread *and* we want this assertion to be something more than a clever metaphor, then both our vocabulary and conceptual repertoire need to be expanded and nuanced. In the context of law reform, Roderick Macdonald describes this need as follows:

Before we naively throw around metaphors that sound good when stripped of their complexity in the field from which they arise, we should consider whether those field specific complexities may actually help us to better understand the law reform project to which we applying the metaphor...<sup>99</sup>

One theme that runs through this chapter has been that applying many epidemiological concepts is a matter of making choices and that these choices are related to both the intuitions and research objectives of the epidemiologist. Defining a population, characterizing the infectious agent, classifying the mode and pattern of transmission, determining the units of time used to plot an epidemic curve; all of these steps involve decisions by the researcher. This doesn't mean that we can just apply these concepts willy-nilly and simply claim – as Humpty Dumpty did – that the words mean whatever we want them to mean.<sup>100</sup> Evidently,

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<sup>99</sup> Roderick A. Macdonald, “Three Metaphors of Norm Migration in International Context” (2009) 34:3 *Brook. J. Int'l. L.* 603 at 633.

<sup>100</sup> See Lewis Carroll, *Through the Looking-Glass: And What Alice Found There* (London: Macmillan, 1872) at 57-58 (where Humpty Dumpty tells Alice “[w]hen I use a word... it means just what I choose it to mean – neither more nor less.”). On Humpty Dumpty's theory of meaning, see Keith Donnellan, “Putting Humpty Dumpty Together Again” (1968) 77 *Philosophical Review* 213.

these decisions will be constrained both by the phenomena under study and the explanatory objectives we give ourselves.

These choices must be made in characterizing the phenomenon that I wish to explain, namely the spread of legal norms. One consequence of this process is that the model that I will construct (using what I called the “mapping function” in Chapter 2) will be specific to my domain of study: the spread of employment drug testing norms from the United States to Canada. There is nothing surprising about this. Though epidemic *theory* is concerned with the spread of contagious conditions as such, an epidemiological study will always be specific to the actual condition under investigation. One does not measure the spread of disease in the abstract, but rather the spread of a particular disease within a particular population.

It is also necessary to underscore the necessity of such choices so as to avoid claims that the model is somehow “rigged”. Realizing that choices have been made in characterizing the phenomena under investigation, one might claim “well *of course* the model explains the data, it was *designed* to do so.” This criticism – essentially a charge of bootstrapping – fails to take into account the objectives of a modelling methodology. My first response is to simply agree with the point, but deny that it constitutes a problem, since a model needn’t necessarily generate falsifiable hypotheses to provide illuminating explanations. In fact, a model may help us understand a phenomenon without generating *any* new hypotheses or new data, simply by allowing us to see connections between existing data points from a dif-

ferent perspective. In this case, the strength of the model is not determined by its truth, but rather by its utility. My second response applies in the case where the model *does* generate hypotheses that can be tested against the data. The answer to the bootstrapping criticism is then to reverse the burden of demonstration. Thus I would respond: the model generates hypotheses that are confirmed by the data, it is up to the critic to show why these hypotheses are not falsifiable.

Before generating and testing hypotheses, however, the epidemiological concepts that we have acquired in this chapter must be mapped onto legal phenomena. That is the subject of Chapter 4.

**CHAPTER 4**  
**MAPPING EPIDEMIOLOGY ONTO LAW**

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## **Introduction**

In the previous chapter, I restricted the base domain of my model to epidemiology, and elaborated on several of the key concepts of that domain. As I set out in Chapter 2, the process of building a model consists of mapping the concepts of the primary (or base) domain onto the secondary domain. The objective of this transposition is to allow for the implication structure of the primary domain to serve as a generator of explanations for phenomena observed in the secondary domain. In this chapter, I will explore some of the different ways in which we might characterize legal phenomena in epidemiological terms in order to build a model.

Modelling the spread of social phenomena using epidemiology has been done before. In the first subsection, we will see the concept mapping that these models mobilize, which will serve in thinking through the particular case of legal phenomena. This may seem like an odd place to begin, since in Chapter 2 I argued that existing viral explanations of social phenomena – notably mimetics – are seriously flawed. Recall that my claim was that mimetics is incoherent because it systematically conflates the base domains of virology, epidemiology, genetics, and evolutionary theory. In what follows, I will treat epidemiological models of the spread of social phenomena that *don't* commit this error – in particular the analysis of rumours and scientific theories.

In the second subsection I will compare the strengths and weaknesses of the different ways in which epidemiological concepts can be applied to legal phenomena, with specific reference to the case of employment drug testing norms. Finally, I will defend the chosen mapping between the two domains.

### **1. The Epidemiology of Ideas: Rumours and Theories**

As I have already discussed,<sup>1</sup> epidemic theory can be applied to the spread of any contagious phenomena. One can abstract from the particular case of the spread of disease to give a general account of its key concepts, which can then be remobilized to account for other forms of spread. Indeed, one could argue that epidemic theory is primarily concerned with the general case, rather than the restricted case of disease spread:

In general, the ‘epidemic’ process can be characterized as one of transition from one state (susceptible) to another (infective) where the transition is caused by exposure to some phenomena (infectious material) *The process need not be restricted to infectious diseases but is a more general abstract process that might be applied to many situations.* All that is needed is the appropriate interpretation of the process elements, that is, susceptibles, infectives, removals, infectious material, intermediary host, latency period, disease, *etc.*<sup>2</sup>

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<sup>1</sup> See Chapter 3, s. 1.

<sup>2</sup> William A. Goffman & Vaun A. Newill, “Generalization of Epidemic Theory: An Application to the Transmission of Ideas” (1964) 204:4955 *Nature* 225 [“Generalization of Epidemic Theory”] at 225 [emphasis added].



Another way of saying this is that an epidemic process is fundamentally a communication process,<sup>3</sup> an idea that is captured by the expression “communicable disease”. The communication of *information* (rather than infection) may be described as an epidemic process.

One communication process that is intuitively amenable to analysis is that of the rumour, which is commonly described as “spreading” between members of a population. Early work on the epidemic spread of information focused on rumour spread.<sup>4</sup> The rumour is thus characterized as an “infectious agent” that spreads through a population and “susceptibles are identified as those not having heard the rumour and the infectious cases correspond to those who are actively spreading the rumour.”<sup>5</sup> In other words, rumour transmission is discussed in terms of the SIR model, though with some simplifications. For example, once one has heard a rumour, one is immediately capable of spreading it – there is no latent or incubation period to be accounted for.

Rumours are just one example of epidemic information spread; though they may initially appear particularly amenable to the transposition of epidemiol-

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<sup>3</sup> William A. Goffman & Vaun A. Newill, “Communication and Epidemic Processes” (1967) 298:1454 Proc. Royal Soc. London. A 316 [“Epidemic Processes”] at 316 (“[E]pidemic theory seems to be applicable to the study of any communication process rather than being restricted simply to the process of transmitting an infectious disease.”).

<sup>4</sup> See, e.g., Anatol Rapoport, “Spread of Information Through a Population With Socio-structural Bias: I. Assumption of Transitivity” (1953) 15:4 Bulletin of Mathematical Biophysics 523; Anatol Rapoport & Lionel I. Rebhun, “On the Mathematical Theory of Rumor Spread” (1952) 14:4 Bulletin of Mathematical Biophysics 375. For a review, see Klaus Dietz, “Epidemics and Rumours: A Survey” (1967) 130:4 J. Royal Stat. Soc. A. 505. For a recent discussion, see Kazuki Kawachi *et al.*, “A Rumor Transmission Model With Various Contact Interactions” (2008) 253:1 J. Theoretical Biology 55.

<sup>5</sup> Dietz, *ibid.* at 523.

ological concepts because our pretheoretical notions of rumour propagation draw heavily on epidemic imagery. Further reflection, however, allows us to see how other forms of information spread may be characterized as epidemic, given a suitable construal of the key concepts used in epidemiology.

So-called “intellectual epidemics” provide another example – one which adds some complexity to the rumour model by integrating more of the conceptual apparatus of epidemiology. Consider the following characterization of the spread of the psychoanalytic theory:

Freud was no less host to the infectious material of the ‘disease’ of psychoanalysis than the person carrying the organism capable of transmitting a cold, nor is his writing less of a ‘vector’ carrying the ‘infectious material’ than the mosquito as a carrier of malaria.

Moreover, Abraham, Ferenczi, Jung and Jones were no less ‘susceptibles’ who were infected by the ideas of Freud and who, after a certain latency period, themselves became ‘infectives’ than are those individuals infected by the droplets expressed by a cold carrier. Jung might represent an example of acquired resistance to the disease while the resistance of the medical community of Vienna could represent innate immunity.<sup>6</sup>

The use of shudder quotes around the epidemiological concepts of disease, vector, infectious material, susceptible and infective indicates that they are being invoked in a non-standard context. Indeed, what is being operated is the very kind of con-

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<sup>6</sup> Goffman & Newell, “Generalization of Epidemic Theory”, *supra* note 1 at 225.

ceptual mapping that I identified as being central to the modelling methodology in Chapter 2. This mapping is represented in Figure 4-1.<sup>7</sup>

	<b>Elements of epidemic process</b>	<b>Elements interpreted in terms of</b>	
		<b>Infectious disease epidemic</b>	<b>Intellectual epidemic</b>
<b>Host</b>	Agent	Infectious material	Idea
	Infective	Case of disease	Author of paper
	Susceptible	Person who will be infected given effective contact	Reader of paper who will be infected given effective contact
	Removal	Death or immunity	Death or loss of interest
<b>Vector</b>	Agent	Infectious material (as for host)	Idea (as for host)
	Infective	Vector harbouring the agent	Paper containing useful ideas
	Susceptible	Vector not harbouring the agent	All papers containing potentially useful ideas
	Removal	Death	Deletion or loss

*Fig 4-1. Analogy between infectious disease and intellectual epidemics.*

Though the table represented in Figure 4-1 shows the analogy between the base domain of an infectious disease epidemic and the secondary domain of an intellectual epidemic, it remains schematic. What is missing is a formal definition of the terms in the secondary domain, which would be required in order to operationalize the model and generate testable hypotheses.

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<sup>7</sup> Reproduced from *ibid.*

Such operationalization has been done for particular intellectual epidemics, particularly in the natural sciences.<sup>8</sup> The study of the spread of ideas in the natural sciences is part of a field of inquiry dubbed “scientometrics”. The academic literature of the natural sciences may be particularly suited to the operationalization of a model of intellectual epidemics because of the way its constitutive information is stored and cross-referenced. The existence and sophistication of large citation indexes provides an easily accessible data set against which hypotheses can be tested.<sup>9</sup> Some proponents of scientometrics have gone further, claiming that it is the nature of the scientific enterprise itself that makes it amenable to quantitative analysis.<sup>10</sup>

In Chapter 5, I set out a methodology that draws on the insights of this scientometric literature. Many legal texts are collected in large databases with a sophisticated citation and cross-referencing systems that allow for the use such a methodology. Furthermore, as we shall see, though law is different from science in many important ways, the role that authority plays in legal reasoning makes legal corpuses well-suited to this kind of analysis. For now, however, what is important

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<sup>8</sup> For an early such study, conducted by one of the first proponents of the notion of intellectual epidemics, see William Goffman, “Mathematical Approach to the Spread of Scientific Ideas - The History of Mast Cell Research” (1966) 212:5061 *Nature* 449. For a review of Goffman’s empirical work on intellectual epidemics, see Eugene Garfield, “The Epidemiology of Knowledge and the Spread of Scientific Information” (1980) 35 *Current Contents* 5.

<sup>9</sup> Curiously, the roots of the SCI (Science Citation Index) used as the basis for most scientometric work – and indeed of the very idea of citation pattern analysis generally – are found in *legal* citators, the most famous of which is Shepard’s citation index. This relationship is largely ignored however, constituting a “gaping hole” in the historiography of bibliometrics. Fred R. Shapiro, “Origins of Bibliometrics, Citation Indexing, and Citation Analysis: The Neglected Legal Literature” (1992) 43 *J. Am. Ass’n for Information Science* 337.

<sup>10</sup>Derek J. de Solla Price, “Editorial Statements” (1978) 1 *Scientometrics* 3.

to retain is that the mapping of concepts in creating my model will require relatively strict definitions if it is to be operationalized.

## 2. The Epidemiology of Law

Recall that my initial intuition is that Canadian law was initially infected with norms governing employment drug testing from American law and that these norms subsequently spread within Canadian law. Clearly, we need to make the notions of “law”, “norms” and “infection” more robust in order to effect the conceptual mapping from epidemiology.

### 2.1. *The Population Studied*

What is the “population” of Canadian law that corresponds to the epidemiological concept of population? In constructing my model, I need to distinguish the different elements of the definition I will be using for populations.

First, I set out the *basic unit* of the primary population, which will be used in defining a population and drawing its boundary. By “basic unit”, I mean what sort of element could count as a member of the primary population. Thus the basic unit of the primary population “Canadians over thirty” is “persons”. In order to be a member of this population, one must first and foremost be a person. We need not enquire into a dog’s citizenship or age to determine whether it is a member of the population – it is simply not the right *kind of thing*.<sup>11</sup>

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<sup>11</sup> In set-theoretical terms, we could say that  $\{\text{Canadians over thirty}\} \subset \{\text{persons}\}$  and  $\{\text{Canadians over thirty}\} \cap \{\text{persons}\} \neq \emptyset$ , whereas  $\{\text{Canadians over thirty}\} \cap \{\text{dogs}\} = \emptyset$ .

Next, I draw the population boundary by defining the particular characteristics that must be shared by all of its members in order for them to be included. I also describe some elements of the population profile, which is set out in further detail in Chapter 5.

### *2.1.1. Basic Units of the Primary Population – Legal Texts*

One rather obvious candidate for the basic unit of the population in the epidemiology of law would be people – in particular, legal actors. Thus, for example, a manager at a Canadian factory could become infected with American norms relating to drug testing upon receiving a directive from the human resources department, which in turn may have been infected when some of its members attended a conference on workplace drug abuse given by an industrial relations consultant who was infected when he read the U.S. jurisprudence, *etc.* This stipulation – that it is people who are infected – is akin to the population definitions in both the rumour and intellectual epidemic models discussed above. The infectious material consists of some defined set of ideas (the rumour, the scientific theory, the norms to be applied) and effective contact between an infective and a susceptible consists in a communicative event. Of course the population profile for a particular study (*i.e.* which people, having what characteristics, over what period of time) would require further refinement, but the basic unit of the population would be the same.

Stipulating that the basic units of the population are people, however, leads to serious problems, both conceptual and practical. First, we are faced with the

difficulty of clearly defining what it means for somebody to “have” an idea. Furthermore, even if we *could* “have” ideas in the same way that we “have” diseases, in order for this to apply to legal norms we would need to make the further argument that legal norms are (nothing more than) ideas. This is far from obvious, given the social nature of norms; it is not at all clear that we can have private norms any more than we can have a private language.<sup>12</sup>

This is the problem I discussed in Chapter 2 in relation to Dawkins’ meme concept; although stripped of the false analogy to genes, Dawkins’ formulation may appear satisfactory. Recall that, for Dawkins, an idea is an information structure within the brain that is expressed as words or other forms of behaviour.<sup>13</sup> We could even remain agnostic as to the ontology of the “information structure” and simply rely on behaviour to identify infectives. Call this “the behaviourist solution”. This is akin to relying on the symptoms of a disease determine whether someone is infected, without making a claim about its etiology.

In the case of rumours, the behaviourist solution works well: one is an infective when and only when one communicates the rumour to a susceptible. Silently relishing the thought that Joe from marketing is dating Mary from account-

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<sup>12</sup> On Wittgenstein’s argument against the possibility of a private language, see generally, Owen Roger Jones, ed., *The Private Language Argument* (London: MacMillan, 1971). On the relationship between the private language argument and the notion of rule-following, see Saul Kripke, *Wittgenstein on Rules and Private Language* (Oxford: Blackwell, 1982).

<sup>13</sup> Richard Dawkins, *The Extended Phenotype: The Gene as the Unit of Selection* (Oxford: Freeman, 1982) at 9. See also, Luís M. A. Bettencourt et al., “The Power of a Good Idea: Quantitative Modeling of the Spread of Ideas From Epidemiological Models” (2006) 364 *Physica A* 513 at 514 (“By the term ‘idea’ we refer generally to any concept that can be transmitted from person to person... *What is important is that it is possible to tell if someone has adopted the idea, understands and remembers it, and is capable of and/or active in spreading it to others.*” [emphasis added]).

ing simply does not count. The idea of a rumour is, as it were, in the spreading and not in the having.<sup>14</sup> Similarly, a scientist may be said to “have” a theory when she publishes an article in which it appears or teaches it in a lecture. Applied to the law, the utterance (for instance) of “the plaintiff’s cause is dismissed” or the citation of a particular case as binding authority in a written judgement would – given the appropriate context – count as evidence that someone is infected with a legal norm.

The behaviourist solution thus appears to get us off the theoretical hook. We needn’t be concerned that “having” a norm is not analogous to having a disease because we can track infection by the proxy of its symptoms, namely expressive behaviour. A legal norm would thus be more like a “syndrome” – a condition characterized by a set of associated symptoms – rather than like a disease.

But even if the behaviourist solution *does* address the problem of the disanalogy between diseases and norms, this does not solve the practical problems that arise from stipulating that people are the basic units of the population, notably the difficulty of collecting data. Consider the following (non-exhaustive) list of expressive behaviours that might indicate infection with the norm “all drivers must stop at red lights”:

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<sup>14</sup> Strictly speaking, the private rumour relisher would be *infected* but not *infective*. Both the person who believes the rumour but does not spread it and the person who hears the rumour and does not believe it (*i.e.* an immune person) would become removeds. Some models include other classes, such as “stiflers”, who actively disbelieve the rumour and seek to prevent further spread. See *e.g.* Kawachi *et al.*, *supra* note 4 at 56; Bettencourt, *et al.*, *ibid.* at 518.



- A statute containing a stipulation to the effect that all drivers should stop at red lights;
- Positive response to a questionnaire containing the question “must all drivers stop at red lights?”;
- Stopping routinely at red lights while driving;
- A police officer pulling someone over for not having stopped at a red light;
- A judgement rendered by a tribunal fining someone for not having stopped at a red light;
- Routinely showing disapproval when someone fails to stop at a red light;
- A pamphlet distributed to new drivers that states “you must always stop at red lights”;
- *etc.*

On analogy to disease spread, we could say that each of these behaviours is a symptom of the condition “adherence to the red light norm.” Notice, however, that this list is not only non-exhaustive, but that no exhaustive list could be in principle enumerated. Diseases generally have a list of frequent symptoms, a number of less frequent symptoms and some rare symptoms. Taken together they can be characterized as a (more or less) definitive list. But the number of expressive behaviours that can demonstrate adherence to a norm is literally limitless.

Nor does the analogy to a syndrome help us, since even a syndrome whose etiology is unknown has – by definition – a finite list of characteristic symptoms. The only way to capture the limitless forms of expressive behaviour that could be symptomatic of adherence to a given norm would be to characterize them at a high level of abstraction, for instance: “expressive behaviour whose semantic con-

tent and normative commitment indicate adherence to norm  $X$ .” But this is a tautology; *of course* behaviour that indicates adherence to a norm is symptomatic of adherence to the norm!

Not only are the expressive behaviours that might indicate adherence to a norm extremely varied and theoretically limitless, but many of them are not readily accessible to the erstwhile epidemiologist of law. One of the preconditions to epidemiological research is access to existing data on incidence rates or the design of a study that allows for this data to be collected. Indeed, the historical development of epidemiology as a discipline was predicated, in part, on the emergence of a vital statistics system that collected data on mortality and morbidity.<sup>15</sup> If it is relatively easy to have access to some forms of expressive behaviour related to law, other forms such as routine conduct are difficult to collect in a systematic way.

Furthermore, for many diseases (though admittedly not for syndromes), there exists a conclusive diagnostic test. If I visit a doctor and complain of a sore throat and fever, she might suspect that I have streptococcal pharyngitis (*i.e.* “strep throat”). Her suspicion might be strengthened upon examination if she discovers that I have inflamed tonsils and yellow and white patches in the throat. In case of doubt, she can confirm the initial diagnosis by taking a culture (“throat swab”) and sending it to a laboratory to detect for the presence the bacterium responsible for strep throat (*streptococcus pyogenes*). A positive test is conclusive of infection. In the

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<sup>15</sup> See generally, Abraham M. Lilienfeld & David E. Lilienfeld, *Foundations of Epidemiology*, 2<sup>nd</sup> ed. (Oxford: Oxford University Press, 1980) at 23-43.

case of adherence to a norm, however, it is not obvious what would count as a conclusive diagnostic.

These two obstacles – the limitless number and wide variety of expressive behaviours that can serve as evidence of infection and the absence of a conclusive diagnostic test – make data collection extremely difficult. If an epidemiological model requires us to identify the number of infectives in a population over time and we have neither a finite number of criteria nor a conclusive test for identifying infectives then we are faced with a serious problem. Let us call this “the data collection problem”. There is a solution to the data collection problem, but as we shall see, the solution entails that there is a better basic unit of population; namely the legal text.

The solution to the data collection problem is to stipulate some finite subset of symptoms (*i.e.* of expressive behaviour) the members of which are: (a) amenable to an analysis that allows for the identification of infection by the norm, and (b) readily accessible. The best candidate that satisfies these two criteria is legal texts. Statutes, regulations, tribunal decisions, contracts, wills, policies and commentary are all amenable to textual analysis in order to determine whether they incorporate a particular legal norm. Many of them are also readily accessible, depending on the publicity requirements of the legal environment in which they operate.

Using the terms of the behaviourist solution, if we consider people to be the basic units of the population, then legal texts would serve as evidence of their infection. But, as the intellectual epidemic model suggests, they can also be seen

as methods of transmission to other members of the population.<sup>16</sup> Texts would thus be analogous both to symptoms and to fomites or – as in the table in Figure 4-1 – vectors. This is not necessarily incoherent; sneezing is both a symptom of the flu and a method of its transmission.

So, legal texts can be seen as tokens of a certain type of expressive behaviour that may be symptomatic of infection by a member of the population. We thus have a (somewhat imperfect) way of identifying infectives. The author of a legal text that expresses the contagious norm is an infective. Similarly, the authors of legal texts in which the norm is considered and explicitly or implicitly rejected can be identified as immune members of the population. Identifying susceptibles presents a challenge however; perhaps we could dub susceptibles as all of the potential authors of legal texts.

Now, defining the members of the population as the authors or potential authors of legal texts suffers from a number of serious drawbacks, not the least of which is a restriction of the category of law to its written expression. I shall discuss this below, but for now I want to point out that if – as I suggest – we concentrate our analysis of the spread of legal norms on the texts in which they are expressed, then the functional role of the basic unit of the population has essentially been reduced to nil. In other words, the people who are authors (or potential

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<sup>16</sup> The table in Figure 4-1 (Analogy between infectious disease and intellectual epidemics) identifies them as “vectors”.

authors) of legal texts have become mere placeholders in the model and do little theoretical and no practical work.

This is an ironic consequence of the behaviourist solution. If – to avoid the problems associated with defining what it means to “have” an idea – we focus our attention exclusively on behaviour, then we have no need for people in our description of the basic unit of the population. Indeed this was precisely the objective of the behaviourist movement in the philosophy of mind characterized by Skinner<sup>17</sup> and Quine.<sup>18</sup> It is essentially an application of Ockam’s razor: if everything we want to explain can be explained with behaviour then we can jettison the category of mind out of “ontological parsimony”.<sup>19</sup>

Instead of using people as the basic unit of the population, I therefore propose to use legal texts as the basic unit. What is infected by a norm is a text and the distribution and pattern of spread of the norm are to be looked for in the relationships between these texts.

In excising people from my description of the population, I don’t mean to imply that people are unimportant in spreading norms or that norms somehow

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<sup>17</sup> See B. F. Skinner, *About Behaviorism* (New York: Knopf, 1974).

<sup>18</sup> See Willard v. O. Quine, *Word and Object* (Cambridge, MA: MIT Press, 1960).

<sup>19</sup> “[Ockam’s Razor] can be straightforwardly applied... when a theory, T, postulates entities which are explanatorily idle. Excising these entities from T produces a second theory, T\*, which has the same theoretical virtues as T but a smaller set of ontological commitments. Hence, according to [Ockam’s razor], it is rational to pick T\* over T.” (Alan Baker, “Simplicity” in Edward N. Zalta, ed., *The Stanford Encyclopedia of Philosophy*, Fall 2008 ed., <<http://plato.stanford.edu/archives/fall2008/entries/simplicity/>>). For Quine’s argument for the minimization of ontological commitments, see Willard v. O. Quine, “On What There Is” (1948) 2:5 *Review of Metaphysics* 21.

spread independently of people. Of course legal texts are written by authors and they are read and interpreted by readers. Ultimately, it is people who adhere (or not) to norms and who govern their behaviour accordingly. The use of texts as the basic unit of the population is not meant as a denial of this fact. Rather, it is a response to some of theoretical and practical problems that arise by focusing on individual actors in describing the spread of norms. Furthermore, this is in keeping with a certain tendency to depersonalize law; a tendency that I don't believe is entirely pernicious.<sup>20</sup> Lawyers and legal scholars are generally interested in legislation and jurisprudence for what they say and not for who wrote them.<sup>21</sup>

Critics might argue that I have taken an overly textual approach; literally one of “law on the books” that ignores the multifaceted “law in action”. The law, they could say, is much more than a collection of words on paper. It includes un-

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<sup>20</sup> Depersonalization is, for example, the basis of the rule against bills of attainder (*e.g.* in U.S. Const. art. 1, § 9, cl. 3).

<sup>21</sup>This is not to deny that there is room for biography in legal scholarship or practice. It is a legitimate research project to analyze how a particular judge shaped the jurisprudence on a given topic or how a particular legislator managed to affect the law. Likewise, citation of a judgement rendered by a particularly eminent judge may be a good strategy for legal practitioners.

written norms, practices, attitudes – the whole “buzzing blooming confusion”<sup>22</sup> of human interactions that can be organized using categories conventionally determined as “legal”. My response to this is to agree that texts imperfectly capture the complexity and nuance of the universe of legal normativity, but to deny that this means I am unjustified in taking legal texts as my basic unit of population. Certainly, there are other possible methodological solutions to the data collection problem: a sociologist might try to discover norm adherence by analysing responses to a questionnaire or running focus groups, for instance, and an anthropologist might do legal ethnography as a participant observer. In each of these cases, the solution to the data collection problem is a variation on the same theme: reducing the categories of expressive behaviour examined in order to have a manageable data set. Furthermore, these methodologies suffer from a defect that textual analysis of the jurisprudence does not: the need for an account of the relationship between the texts and the various other expressions of legal normativity. Imagine that (say) a sociologist had performed a methodologically sound study of Canadian workplaces and discovered that adherence to a set of norms relating to

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<sup>22</sup> The phrase is from William James, see, *e.g.* William James, *Some Problems of Philosophy* (London: Longmans, Green & Co., 1911) at 50; William James, “Psychology: Briefer Course” in William James & Gerald E. Myers, eds., *William James: Writings, 1878-1899* (New York: Library of America, 1992) 1 at 24. Its use to describe the range of human interactions that can be organized using the concept of law is a favourite of Roderick Macdonald’s. See, *e.g.*, Roderick Macdonald, “Transdisciplinarity and Trust” in Margaret A. Somerville & David Rappaport, eds., *Transdisciplinarity: reCreating Integrated Knowledge* (Montreal: McGill-Queen’s Press, 2003) 61 at 64, 75; Roderick Macdonald, “Unitary Law Re-form, Pluralistic Law Re-Substance: Illuminating Legal Change” (2007) 67 *La. L. Rev.* 1113 at 118-19; Roderick Macdonald & Thomas McMorrow, “Wedding a Critical Legal Pluralism to the Laws of Close Personal Adult Relationships”, online: (2007) 1:1 *European Journal of Legal Studies* <<http://hdl.handle.net/1814/6853>> at s. II.A. (“Law is a label we attach to human phenomena; before we apply the word law, there are just data in the world – and even the conception of the “big, blooming, buzzing confusion” of experience as data implies a human intellectual endeavour. Through our labelling, we construct the phenomena, the data, and the confusion as “law” rather than as something else.”).

drug testing had spread in a way that could be described epidemically. This would not – in itself – explain the appearance of the spread of the norms across legal texts and thus contribute to a solution to the problem raised in Chapter 1, namely to explain the spread of the drug testing norms from the United States to Canadian *jurisprudence*. To do this, our erstwhile sociologist would have to take the further step of explaining just how norms that are adhered to in workplaces find their way into jurisprudence. This is, of course, no small feat. Indeed, it would be rather surprising to find that jurisprudence perfectly mirrors adherence to legal norms “on the ground”. More likely, the perceived spread across workplaces and the perceived spread across the jurisprudence would not match up. What looked like a promising methodology for answering our research question would thus have raised more questions than it addressed. In contrast, whatever its limitations, the analysis of legal texts does not suffer from this particular defect.

Incidentally, the same critique (and the same response) apply to studies of disease spread. A researcher’s decision to rely, say, on the number of cases reported to the health authorities entails that an aspect of the phenomenon will be missed; namely the percentage of the population who suffer symptoms but do not report them. The researcher could also choose to administer questionnaires about symptoms to a sample of the population or to live amongst them and report her observations of symptoms in a notebook. The point is that *none* of these methods will *entirely* capture the incidence rate. The choice of a data set is a matter of selecting from the available range of observable phenomena. As long as one is



aware of the limitations of one's data set and methodology and the appropriate provisos are set out in one's conclusions, these limitations are not a serious problem.

Finally, my decision to use texts rather than people as the basic unit of the population is a matter of choice based on my research objectives. Just as in the case of malaria we can choose to see mosquitos as vectors of transmission among a human population or humans as a vector of transmission among a mosquito population, so can texts be seen either as vectors or population members in the epidemiology of legal norms. Keeping in mind that this is a stipulative definition and not a claim of ontological priority, we can simply note that the choice has been made and get on with the project.

Besides providing a solution to the data collection problem, working with a population of texts – and in particular with legal texts – has a number of advantages. First, the structure of legal texts allows us to trace the chain of infection with relative ease. Because of the importance of authority as a justification in legal reasoning, legal texts often explicitly state the sources that they rely upon. The practice of reference and citation thus provides a valuable indicator of the origins of a norm adopted or rejected. Admittedly, this is not true of *all* legal texts; private contracts and wills, for instance, rarely cite other texts. Nor is reference and citation uniformly spread across legal texts; jurisprudence often cites legislation for

authority, but legislation rarely refers to caselaw.<sup>23</sup> Nevertheless, many of the members of the population of legal texts explicitly indicate their sources,<sup>24</sup> which greatly simplifies the discovery of particular infection chains. This is in stark contrast to the epidemiology of diseases; with some exceptions (in the case of extremely rare diseases or sexually transmitted diseases in small populations, for example) it is extremely difficult to figure out which infective was in contact with which susceptible and whether that contact was effective in the sense of being an instance of transmission.

Second, legal texts almost always have references situating them in time. For example, statutes indicate their dates of adoption and coming into force, tribunal decisions indicate the date rendered and also often the dates on which the case was pled, contracts usually indicate the date of signing, *etc.* This feature is due to the importance of the passage of time in the creation and extinction of legal rights and remedies (as in the case of prescription, filing delays, and so forth) as well as in the application of such doctrines as *res judicata* and *stare decisis*. Thus, whereas situating the epidemiological epochs<sup>25</sup> for diseases is a matter of educated guesswork (or at best, probabilistic deduction), situating the epidemiological ep-

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<sup>23</sup> For two rare example, see the *Arbitration Act*, 1991, S.O. 1991, c. 17, ss. 3(1)(i) and 5(4) (describing an “agreement... requiring that a matter be adjudicated by arbitration before it may be dealt with by a court” as a “Scott v. Avery clause” in reference to *Scott v Avery* (1865) 10 ER 1121); U.S., H.B. 1374, *An Act to Overturn the Shepard Case [and] to Overturn the Skinner Case*, 2007-2008, Reg. Sess., N.C., 2007 (enacted).

<sup>24</sup> Note that the same is often true of scientific texts, which also follow strict norms of citation and reference.

<sup>25</sup> See Figure 3-4 (Relations between epidemiological epochs) and accompanying text in Chapter 3.

ochs affecting legal texts is both relatively simple and relatively precise; the texts themselves display the relevant dates.

Having decided that the basic unit of the population to be studied are legal texts, the next step in constructing my model is the definition of a population and the tracing of its boundary.

### 2.1.2. *Population Definition and Population Boundaries*

Recall that the definition of a population and the tracing of its boundaries are interrelated. The definition of the population is constituted by a general description of the group of individuals to be studied and tracing the boundaries is an exercise in refining the criteria for determining whether a given individual falls within the defined population. So far, all I have said about the population that I want to study is that it is comprised of legal texts. In this subsection I will set out which legal texts I will be studying and some of the boundaries that will be used in determining whether a text is included in this population.

Note that this does *not* mean that I will list all of the characteristics of the members of the population that may explain difference in incidence. In order for individual characteristics to be measured and their relationship to incidence compared, the individuals must first be included in the population. One of the examples I gave above illustrates this: if I want to know whether the incidence of a disease in a population varies with sex, then I must include members of both sexes in my study population. I set out the characteristics that I will include in analyzing

my data in Chapter 5, where I set out the methodology that will be used in operationalizing the model.

Neither will I set out in detail the entire population profile in this chapter. The population profile is an empirical description of the population based on its definition and its boundaries. In Chapter 5, I enumerate the characteristics of the members of the population that will be measured in order to profile it and provide a detailed population profile based on the results of those measurements.

One final proviso: in the previous subsection, I made general arguments in support of using legal texts as my basic unit of population. Those arguments may be applicable to a wide range of phenomena, without further modification. Whenever we are faced with a legal system in which texts play an important role, we can argue that an epidemiological model of the propagation of norms within that system may use legal texts as its basic unit of population. In this subsection, however, I define the specific population that I am interested in for this particular study. While many of the claims that I make to justify my definition may also serve to justify similar definitions of other populations, changes will certainly need to be made to account for the differences in research objectives.

With these provisos in mind, we can now get on with the definition of the population. I have already stated that my interest is in how employment drug testing norms spread from the United States to Canada. Having defined the basic unit of population as the legal text, we can refine our inquiry into how American employment drug testing norms spread to Canadian legal texts. The first element

of our population definition is thus that the legal texts must be Canadian. However, we must still choose *which* Canadian legal texts.

As I have already discussed, defining a population is not a question of *a priori* deduction. In other words, having decided what our basic unit of population is does not commit us to any particular population definition. The definition is a choice based on research objectives, which are in turn based on our intuitions about which populations would produce interesting and meaningful results if studied. For instance, if we wanted to study the spread of HIV, the basic unit of population would be “humans” (implied by the fact that HIV is the *Human* Immunodeficiency Virus), but we would still have to decide *which* humans are to form our population. We could choose to study the spread of HIV in Asia (all people in Asia), or among intravenous drug users in Montreal (all people who live in Montreal and who use intravenous drugs), among Dutch adults (all people resident in the Netherlands over a certain age), *etc.* There is no *principled* reason for choosing one population over another. If we wanted to, we could do a perfectly valid epidemiological study of the spread of HIV among people named George whose birthday is in December. Of course, though there is no principled reason to reject such a population definition, the study would be unlikely to be of any interest nor to produce meaningful results.

The definition of the population will also depend on practical matters of feasibility, notably the quantity and accessibility of available data. It may initially appear tempting to simply include *all* Canadian legal texts in the population, but

this would raise insurmountable obstacles. Consider the following (non-exhaustive) list of candidates for inclusion in this population; that is, Canadian texts that can be reasonably construed as legal and which can be expected to refer to norms relating to drug testing in the context of employment:

- Federal, provincial and territorial statutes and regulations;
- Orders-in-council, decrees, ministerial directives, and other executive instruments;
- Administrative guidelines, policy statements, and other documents adopted or promulgated by ministries, departments, and other state agencies;
- Decisions rendered by federal, provincial and territorial tribunals and boards of arbitration;
- Claims, grievances, motions, facta, and other procedures filed with those tribunals;
- Legal opinions written for employers, unions, individuals, or government agencies;
- Collective agreements and individual contracts of employment;
- Personnel policies and other private legislative instruments;
- Memos, directives, and other private executive instruments;
- Signs (*e.g.* “This is a drug-free workplace!”), pamphlets, leaflets and other documents purporting to inform people of their rights and responsibilities;
- Commentary and academic papers published in professional journals, law journals, and monographs;
- Blogs and websites;
- *etc.*

It is immediately apparent that this list (which is incomplete) covers an enormous number of texts. In other words, if we simply limit our definition of the population to Canadian legal texts – even just those that we would expect to refer to drug testing in the employment context – our population is going to be much too large to perform any kind of useful data analysis. Furthermore, many of the texts in the list are not available for collection and analysis, either because they are impossible to access (for instance in the case of legal opinions, which are covered by attorney-client privilege) or because they are not publicly available (for instance, in the case of many corporate personnel policies). In addition to these hurdles, even many documents that *are* publicly available are unpublished and it is therefore not feasible to access them in any systematic way (for instance, in the case of collective agreements, which must be filed with the relevant authorities in all Canadian jurisdictions,<sup>26</sup> but which are not systematically published). Consequently, we are faced with a variant of the data collection problem: even if we substantially reduce the limitless number of expressive behaviours that might count as symptomatic of infection by defining the basic unit of population as legal texts, we are still confronted with (a) too much data and (b) data that is difficult if not impossible to collect in a systematic way.

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<sup>26</sup> British Columbia *Labour Relations Code*, R.S.B.C., c. 244, s. 51; Alberta *Labour Relations Code*, R.S.A. 2000, c. L-1, s. 132; Saskatchewan *Trade Union Act*, R.S.S. 1978, c. T-17, s. 31; Manitoba *Labour Relations Act*, C.C.S.M. c. L10, s. 22(5)(b); Ontario *Labour Relations Act*, 1995, S.O. 1995, c. 1, Sch. A, s. 90; Quebec *Labour Code*, R.S.Q. c. C-27, s. 72; New Brunswick *Industrial Relations Act*, R.S.N.B. 1973, c. I-4, s. 37(3); Nova Scotia *Trade Union Act*, R.S.N.S. 1989, c. 475, s. 46; Prince Edward Island *Labour Act*, R.S.P.E.I. 1988, c. L-1, s. 43(2); the Newfoundland and Labrador *Labour Relations Act*, R.S.N.L. 1990, c. L-1, s. 96; Canada *Labour Code*, R.S.C. 1985, c. L-2, s. 115.

One possible solution to this variant of the data collection problem is to confine our definition of what texts count as “legal”; that is, to restrict our criteria for juridicity. *Contra* the insights of legal pluralism, we could thus make the argument that only those texts adopted by the state or that directly reference state norms are legal texts. On this view, the other texts listed might express norms, but they are not *legal* texts and thus they fall outside of our definition of the basic unit of the population. Consequently, they shouldn’t be included in the population. Note that this solution is not a matter of population definition, but rather a way of refining the basic unit of population.

This solution is undesirable for two reasons. The first reason is that it isn’t really a solution at all. That is, even if we remove all texts that are not paradigmatically legal on a narrow reading of the term, we still have the same data collection problem. We may have reduced the total number of texts, thereby making the data set *prima facie* more manageable, but we are still left with many that are unavailable. Surely, even the most restrictive criteria of juridicity will allow for procedures filed before state tribunals to count as legal texts, and yet the sheer number of these documents and their dispersion across hundreds, if not thousands, of registries make their systematic collection impossible.

The second reason not to restrict the definition of “legal” in order to solve our new data collection problem is that it forces us to adopt a theoretical stance for the sole purpose of practical expediency. Certainly one could defend a narrow conception of juridicity on principled grounds, but these grounds should be inde-



pendent of whether they make data collection easier. It is one thing to adjust one's theory when confronted with data that doesn't fit – this is good scientific practice and forms the basis of Popper's falsifiability criterion<sup>27</sup> – it is quite another to change one's theory simply because it makes research easier. Karl Llewellyn (who relied on appellate cases as the basis for his legal analysis despite his view that law is the actions of officials rather than the words of judges) described this risk of basing one's conception of law solely on the easily available data:

I am prey... to the old truth that the *available* limits vision, the available bulks as if it were the whole. What records have I of the work of magistrates. How shall I get them? Are there any? And if there are, must I search them out myself? But the appellate courts make access to their work convenient. They issue reports, printed, bound, to be had all gathered for me in the libraries. The *convenient* source of information lures. Men [*sic.*] work with it, first, because it is there; and because they have worked with it, men built it into ideology.<sup>28</sup>

Though the scope of readily available legal texts has widened radically since Llewellyn, the basic problem remains. What is therefore important is that we heed Llewellyn's warning and resist the urge to reify constraints on available data into an ideology.

A better solution to this version of the data collection problem is to define the population (as opposed to the basic population units) in such a way as to only cover those members about whom meaningful data can be systematically col-

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<sup>27</sup> Karl R. Popper, *The Logic of Scientific Discovery*, 2nd ed. (London: Routledge, 2002), especially at chapter 4.

<sup>28</sup> Karl N. Llewellyn, *The Bramble Bush* (Oxford University Press: New York, 2008) at 95.

lected. This is simply a recognition that a practical problem requires a practical solution, as opposed to theoretical *ad hocery*. We must recognize, however, that in defining the population around practical limits we are reducing the scope and the generality of the conclusions that can be drawn from our investigation into it. This is part of any good study design.

My choice of the population definition is thus dependent on two factors. First, it must address this new variant of the data collection problem, that is, its scope must be such that it allows for systematic collection of meaningful data. This is a *constraint* rather than a choice. The second factor is one of choice: from the available subsets of legal texts (*i.e.* the possible populations that aggregate legal texts) I must choose one that corresponds to my research objectives.

Recall that the intuition I set out after a first textual analysis in Chapter 1 was that the Canadian jurisprudence showed evidence of having been derived from U.S. norms, even in the absence of legislative intervention. This led me to hypothesize that the norms had spread to the Canadian jurisprudence from the U.S. and that this spread could be explained epidemiologically. I therefore propose to limit my population of legal texts to Canadian jurisprudence.

I am aware that this radically reduces the number of texts to be analysed; this is one reason for restricting the definition in the first place. But I might have chosen a larger population that nevertheless avoids the data collection problem. For instance – in addition to jurisprudence – I could include legislation and commentary in my population. These are the only other sets of legal texts that are

both routinely published and generally available in databases, and which are therefore amenable to systematic collection and analysis. I have different reasons for excluding each of these sets of texts from my definition of the population.

I exclude legislation for the simple reason that there is virtually none, regardless of how the notion of “employment drug testing norms” is cached out.<sup>29</sup> Indeed it was precisely this legislative silence that led me to dismiss the transplant and harmonization models of legal norm transmission in favour of an epidemiological approach. In any event, a meaningful discussion about the transmission and spread of a phenomenon across a population requires a population of a certain size.<sup>30</sup> There are just not enough instances of infection in Canadian legislation to ground such a discussion.

Contrary to legislation, there is a substantial amount of commentary that deals explicitly with employment drug testing in Canada. One might therefore ask why I have chosen to exclude commentary from my population description, given that it does not suffer from the obscurity that led me to exclude other legal texts

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<sup>29</sup> The only clear reference is to be found in Prince Edward Island’s *Student Transportation Regulations*, P.E.I. Reg. EC485/98 at s. 9 (“A school board may require a driver to undergo... addictions tests or treatment as recommended by the examining physician.”). The *Canada Labour Code*, *supra* note 26 provides, at s. 125.3(3) that “employers of employees employed in a coal mine” must require their employees to undergo searches “for the purpose of preventing... drugs... from being brought into the mine”, but the *Coal Mines Occupational Safety and Health Regulations*, SOR/90-9 at ss. 142-43 clearly indicate that this is to be a search of the person and not a drug test. Similarly, s. 21 of the Saskatchewan *Mines Regulations*, 2003, R.R.S. c. O-1.1 Reg. 2, requires employers and contractors to “...take all reasonable steps to ensure that no person whose ability to work safely is impaired by... any drug... is allowed to work at a mine,” though testing is not explicitly authorized.

<sup>30</sup> This statement is true as a rule, but in purely formal terms, it only requires a population of  $>1$  and there have been *some* studies done on quite small populations. See Raj S. Bhopal, *Concepts of Epidemiology: An Integrated Introduction to the Ideas, Theories, Principles, and Methods of Epidemiology* (Oxford: Oxford University Press, 2002) at 15-16.

(*i.e.* commentary is published and can generally be accessed with ease in searchable databases). The simple answer is that my research objective is to explain how the jurisprudence managed to get infected with the U.S. norms, and how they spread thereafter. The fact that commentary is not impossible to include in my population (as, for instance, legal opinions are) does not mean that they necessarily should be included.

Before moving on to a brief discussion of the boundaries of my population, I should underscore that the mere fact that I have excluded many legal texts from my population description does not mean that they therefore cease to play any role in my model. For instance, in determining whether a decision has come into direct contact with the U.S. norms, I will be looking for references to American legislation, corporate personnel policies, and commentary. I will also refer to elements that are not texts – that is, that are not included in my basic population units – such as individual decision-makers, industries, *etc.* These may play other roles, such as vectors and reservoirs. This is both legitimate and necessary. Epidemiological analysis depends on an understanding of the relationship between the primary population and its environment.

### 2.1.3. *Population Boundaries*

Having defined my population as Canadian jurisprudence, I should briefly state some of the main boundaries that circumscribe it, that is, the basic criteria that will determine whether a given legal text counts as Canadian jurisprudence and ought therefore to be included in my population.

By *jurisprudence*, I mean the written decisions rendered by tribunals that are constituted by statute or authorized by statute to render binding decisions. Thus, not only do judgements from the various courts count as jurisprudence, but so do decisions rendered by administrative tribunals, boards and commissions. Insofar as boards of arbitration are constituted or authorized by statute – as is the case for example with labour arbitration<sup>31</sup> – they are included, though I exclude such boards if they are purely private and consensual, even when they are authorized by statute<sup>32</sup> and where their decisions are thereby given full effect.<sup>33</sup> This exclusion is due to the fact that awards rendered by purely consensual private arbitration boards are generally not published and are therefore inaccessible.

By *Canadian* jurisprudence, I mean decisions rendered by the tribunals mentioned above where the enabling or constituting statute is a statute of Canada or of one of its provinces or territories. This excludes arbitration boards constituted by international agreements, even when the decisions of those boards are enforceable under a Canadian statute,<sup>34</sup> as well as the decisions of foreign tribunals and arbitration boards even when their decisions are enforceable under a Canadian statute.<sup>35</sup>

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<sup>31</sup> See *e.g.* *Canada Labour Code*, *supra* note 26 at s. 57; *Ontario Labour Relations Act*, *supra* note 26 at s. 48; *Quebec Labour Code*, *supra* note 26 at s. 100.

<sup>32</sup> See *e.g.* the *Arbitration Act*, *supra* note 23, *esp.* ss. 1-8; arts. 2638-2643 C.C.Q.

<sup>33</sup> See *e.g.* the *Arbitration Act*, *ibid.*, s. 50; arts. 946-947.4 C.C.P.

<sup>34</sup> See *e.g.* the *Commercial Arbitration Act*, R.S.C. 1985, c. 17 (2nd Supp.), s. 5 and the *Act Respecting the Implementation of International Trade Agreements*, R.S.Q. c. M-35.2, ss. 8-9.

<sup>35</sup> See *e.g.* *Reciprocal Enforcement of Judgements Act*, R.S.O. 1990, c. R.5; arts. 3155-3168 C.C.Q.

Finally, my population will only consist of Canadian jurisprudence that relates to the norms governing drug testing in the context of the employment relationship. I provide some more detail on the basis for this criterion in my discussion of susceptibles and infectives below, and in Chapter 5 I explain how this is operationalized.

## 2.2. *Infection, Contagion, and Spread in Legal Epidemiology*

In the previous subsections, I identified how my model maps the epidemiological notion of population onto the field of law. I argued that legal texts provide the most promising basic unit of population and then defined the population of my study as being Canadian jurisprudence relating to the norms governing drug testing in the context of the employment relationship. Throughout that discussion, I left the concept of norm undefined and provided little in way of explanation of how exactly a norm might be transmitted to a legal text. I turn to these questions now.

In the first subsection I present a working definition of “norm” that serves as the model’s analogue to the epidemiological concept of infectious agent. I then map the different epidemic states of infective, susceptible, and removed onto properties of judgements. Finally, I describe some ways in which judgements might be infected by norms.

### 2.2.1. *A Brief Definition of Legal Norms*

My objective in this subsection is to provide a working definition of “legal norms” for use in the model. This working definition must be sufficient to allow for the mapping of the relevant epidemiological concepts to the field of law.

My intention is *not* to set out a full-fledged theory of legal normativity. There is a vast literature in legal theory that addresses the relationships between legal norms and other forms of normativity. In particular, what the criteria of “juridicity” are (*i.e.* what – if anything – distinguishes a *legal* norm from other forms of normativity such as social mores, games, customs, *etc.*) is the subject of ongoing debate. The different approaches in this literature can be seen as covering a spectrum going from a strict definition of juridicity (exemplified by legal positivists such as Kelsen and Hart) to an expansive one (exemplified by legal pluralists such as Fuller and Macdonald). I do not wish to delve deeply into this debate, which in any case often amounts simply to an exercise in “externaliz[ing]... the burden of the qualifying adjective”, whereby theorists jockey for their stipulative definition of “law” to occupy the core and attempt to relegate divergent views to the periphery.<sup>36</sup>

Furthermore, my definition needn’t allow us to decide on *all* the different ways in which a legal norm can come into being or be expressed. All I need is a definition that provides a criterion or set of criteria for determining if, within a

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<sup>36</sup> Martha-Marie Kleinhans & Roderick Macdonald, “What is Critical Legal Pluralism?” (1997) 12 C.J.L.S. 25 at 33, n. 21.

given text, a statement is or is not the expression of a legal norm. In other words, I need only define one subset of the sufficient conditions of juridicity; there may be other conditions that would also suffice. Also, I needn't set out the necessary conditions.

In addition to the various positions within legal theory, one's definition of "norm" will depend on the disciplinary perspective from which one looks at human behaviour.<sup>37</sup> From a sociological perspective, norms are continually elaborated by and re-inscribed in the multitude of interactions and institutions that constitute social life. "Norms" in this sense refer to the entire gamut of behaviours that can be described as socially acceptable or unacceptable, and formal pronouncements of prescribed behaviour with attendant sanctions for failing to conform to them are but a small subset of this category.<sup>38</sup>

From the perspective of many jurists, however interesting this manifold of social norms may be as an object of study, they have little to do with legal norms, the hallmarks of which are their formal pronouncement by an individual or body vested with the authority to do so and the purported universality of their application.<sup>39</sup> Let's call such formal pronouncements "edicts". Though some dis-

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<sup>37</sup> For a discussion on interdisciplinary dialogue between these perspectives, see Pierre Noreau, "La norme, le commandement et la loi : le droit comme objet d'analyse interdisciplinaire" (2000) 19:2-3 *Politiques et Sociétés* 154.

<sup>38</sup> *Ibid.* at 161.

<sup>39</sup> See e.g. H. L. A. Hart, *The Concept of Law*, 2<sup>nd</sup> ed. (Oxford: Oxford University Press, 1994). Note that the state does not figure in this definition. *Pace* "social scientific legal pluralism", this does not exclude private clubs, religious communities, sports leagues, and thus does not exclude other "legal orders". See Guy Rocher, "Pour une sociologie des ordres juridiques" (1996) 29:1 *Cahiers de droit* 91.



agree that the presence of an edict is *necessary* for a norm to count as a legal norm,<sup>40</sup> none – that I am aware of – deny that it is *sufficient*. In other words, though it may be the case that not all legal norms are edicts, all edicts are legal norms.

When I say that a legal text “sets out”, “adheres to”, “contains”, “pronounces”, etc., a norm, I am referring to edicts. That is, *legal* texts set out *legal* norms. This is not to say that norms in the sociological sense cannot appear in legal texts; it is perfectly possible for a legal judgement to refer to social norms. Certainly a judge may take notice of the existence and content of social norms and even make legal determinations based upon this. For instance, a judge deciding whether the defence of provocation is available to a defendant charged with murder must determine whether the acts or words of the victim constitute a sufficiently egregious violation of social norms as to “deprive an ordinary person of the power of self-control.”<sup>41</sup> Similarly, in interpreting a contract, a judge may be take into account the customary norms that prevail in the social context in which the contract operates.<sup>42</sup> But this judicial appraisal of the existence and content of social norms is an empirical one: the judge must determine what the social norms are in fact, rather than what they should be.<sup>43</sup>

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<sup>40</sup> See, *e.g.*, Roderick A. Macdonald, “Pour la reconnaissance d'une normativité juridique implicite et « inférentielle »” (1986) 18:1 *Sociologie et sociétés* 47.

<sup>41</sup> *Criminal Code*, R.S.C. 1985, c. C-46, s. 232(2).

<sup>42</sup> See, *e.g.* arts. 1426 & 1434 C.C.Q.

<sup>43</sup> On the relationship between customary norms and their recognition by legal authorities, see Hart, *supra* note 39 at 44-8. For a more nuanced view of the legal recognition of social norms, see Jeremy Webber, “Legal Pluralism and Human Agency” (2006) 44 *Osgoode Hall L.J.* 167.

What I mean when I say that a judgement edicts a legal norm is that it states or implies that – as a matter of law – the norm is a standard against which behaviour must be measured. Thus, the statement, in a legal judgement that, “[y]ou must take reasonable care to avoid acts or omissions which you can reasonably foresee would be likely to harm your neighbour”<sup>44</sup> is more than just a description of a social norm; it is an edict.

One might ask why I have recourse to the term “norm” when it may appear from the examples that I have given that the concept of a rule would suffice. I do not wish here to embark on a debate about the semantic differences that may or may not exist between the terms “norm” and “rule” (and their cognates, such as “principle”<sup>45</sup> and “maxim”<sup>46</sup>). Though I do not think that norms can be reduced to rules – at least not without unduly stretching the concept of a rule – it doesn’t seem to me to be fruitful to insist upon the point here. Readers who believe that they can properly do away with the concept of legal norms by translating norms – such as those attributive of jurisdiction and those that confer rights and privileges – into statements that can be expressed solely in terms of rules, should feel free to read “legal rule” wherever “legal norm” appears in this text.

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<sup>44</sup> *Donoghue v. Stevenson* [1932] A.C. 562 at 580.

<sup>45</sup> Ronald Dworkin, *Law's Empire* (Cambridge, Mass.: Harvard University Press, 1986) at 15-28, 243-50.

<sup>46</sup> Max Weber, “The Concept of Following a Rule” in W. G. Runciman, ed., *Weber: Selections in Translation* (Cambridge: Cambridge University Press, 1978) 99.

### 2.2.2. *Infected Texts*

Having minimally defined legal norms such that pronouncements of standards with universal application by individuals or bodies vested with the authority to do so count as instances thereof, it remains to be seen how a text could be *infected* with a norm.

Recall that in epidemiological terms, infections are caused by agents and that an agent is defined as that which causes the condition under observation. In the paradigm case of infection with a disease, the agent is a pathogen. Thus, the agent of AIDS is the HIV, and the agent of the common cold is a *rhinovirus*.

Our first question is then “what is the condition that we wish to observe?” At first it would appear that the answer to this question cannot be “infection with a legal norm”, on pain of circularity. But this is not so. As we saw above, it is possible for a member of a population to be infected without exhibiting any symptoms. Nevertheless, we might ask if there is some observable condition – other than the fact of infection itself – that generally accompanies infection with a legal norm.

If we are to map this distinction between a clinical condition and its etiological agent onto the legal field, then we must make a distinction between the *expression* of a norm in a legal text and the underlying cause of that expression. Furthermore, that cause cannot be something that lies in the head of the author of the text (an “idea” for instance) since I specifically rejected this view in my defini-

tion of the basic unit of population. I want to examine the spread of legal norms through Canadian jurisprudence; not through Canadian jurists.

Nevertheless, it is useful to make the distinction between the expression of a norm in a judgement and the infection of that judgement by that norm. One of the reasons that I chose legal texts for my basic unit of population is that the number of expressive behaviours that could count as evidence for adhering to a norm is limitless. However, the number of textual expressions of a norm is also limitless.

Consider the following statements:

- “The jurisdiction of a grievance arbitrator over disputes arising from the interpretation or application of a collective agreement is exclusive”;
- “L’arbitre de griefs jouit d’une compétence exclusive sur toute mé-sentente relative à l’interprétation ou l’application d’une convention collective”;
- “The only competent authority to adjudicate disagreements arising from the interpretation or application of a collective agreement is a grievance arbitrator”;
- “The Superior Court does not have jurisdiction *ratione materiae* over grievances; this is reserved for arbitrators”;

Surely all of these formulations express the same norm.<sup>47</sup> If a decision containing one of these statements cited a decision containing another of these statements as authority, we would want to say that the former applied the norm set out in the latter. But since the expressions of the norm are clearly different, the norm must be something other than its expression. This distinction between a norm and its

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<sup>47</sup> Found in ss. 100 and 139 of the Quebec *Labour Code*, *supra* note 26.

expression is a version of a distinction made by many philosophers of language, which calls upon the notion of “reference”. For instance, “the author of *The Concept of Law*” and “H.L.A. Hart” both have the same referent; a certain man born in 1907 and who was Professor of Jurisprudence at Oxford from 1952 to 1969.<sup>48</sup>

The notion of reference continues to occupy philosophers of language and raises a number of puzzles that needn’t concern us here.<sup>49</sup> For present purposes, all we need to keep in mind is that two decisions can be infected with the same norm without containing precisely the same statements and that evidence for infection with the norm is the presence of statements that *refer* to it.

Just containing a statement that refers to a norm is not, however, sufficient to exhaust the notion of infection that I want to mobilize. This is because many judgements may contain statements that refer to a norm but that are not edicts in the sense that I described above. For example, judgements often contain statements that refer to norms for the sole purpose of rejecting them. For any norm referred to by the statement *X*, there can be any number of formulations of the sort “I cannot agree with counsel for the plaintiff that *X*” or “*X* is not a part of our law” or “the courts have long rejected *X*, with good reason”, *etc.* In other words, decisions may mention a norm, without that norm being edicted. This is similar

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<sup>48</sup> I am simplifying enormously here. For some examples of the benefits and pitfalls of the use of the distinction between a denoting phrase and its referent, see *e.g.* Bertrand Russell, “On Denoting” (1905) 14 *Mind* 479.

<sup>49</sup> For instance: we might think that given that “the author of *The Concept of Law*” and “H.L.A. Hart” have the same referent they must be identical in meaning, since everything that is true of the former is true of the latter. But one might not know that that particular person in fact wrote that particular book and so “the author of *The Concept of Law* is H.L.A. Hart” would convey new information in a way that  $X=X$  does not.

to the person who carries an infectious agent without exhibiting clinical symptoms; the norm is present, but it does not cause the phenomenon we are interested in.

Finally, the difference between mentioning and edicting a norm is not exclusively a matter of the intention of the author of the text. Some expressions of a norm in a decision may be meant to be edicts but not function as edicts. This is the case, for instance in dissenting judgements and *obiter* remarks.

Bringing all of this together, I can now set out the analogy between infection with an agent in epidemiology and infection with a legal norm in my model. A decision is infected when it contains an expression that refers to a norm. If the norm is merely mentioned – either because this is the intention of the author or because the text does not have the requisite authority – then the decision is an asymptomatic carrier. If the norm functions as an edict, then the infected decision is a full blown case.

#### 2.2.2.1. *Transmission of Norms*

Having defined the infection of a judgement with a norm as being the presence of a statement that expresses that norm, it remains to be seen how a judgement may *become* infected, that is how norms are transmitted. In what follows, I take citation to be the best – but not the only – evidence for transmission. The general case is that some text  $A$ , is infected with norm  $\alpha$  as evidenced by the presence of a statement  $\alpha'$ , which expresses  $\alpha$ ; if a judgement,  $B$ , contains either  $\alpha'$  (direct quotation)

or another statement,  $\beta$ , that expresses  $\alpha$  and is accompanied by a reference to  $A$  (citation), then we can say that  $A$  *infected*  $B$  or that  $\alpha$  was *transmitted* to  $B$  from  $A$ .

I said that citation is not the only possible evidence for transmission, because we might be able to correlate instances of  $\alpha$  in members of the population to texts containing  $\alpha'$  without there being any explicit citations referring thereto. This may appear to be a degenerate case for our population, but it is the rule rather than exception in many epidemiological studies. We often don't know the source of an epidemic and it is precisely for this reason that we search for such correlations, since, if established, they allow us to test hypotheses about the mode of transmission. I don't expect to find many such cases in my data set. That is, I am not sufficiently cynical about the judicial decision-making process as to hypothesize that judges systematically rely upon texts that they fail to cite.<sup>50</sup> Nevertheless, my model allows for the possibility.

My project is to try to describe and explain how it is that U.S. drug testing norms were transmitted to the Canadian jurisprudence, as well as how they subsequently spread through this population. American texts in which the norms appear can thus be seen as a common reservoir. If, in expressing a norm, a Canadian judgement directly cites a U.S. text, we can say that this is evidence of unmediated contact with the reservoir. If a judgement cites another source (other than another member of the primary population) and *that* source cites the U.S. norms,

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<sup>50</sup> I am using the terms “judicial”, “judgement” and “judge” as a shorthand for “judicial or quasi-judicial”, “judgement, decision or award” and “judge, arbitrator or other decision-maker” respectively. This is purely a matter of readability, and unless the context clearly indicates otherwise, I should be taken to be referring to all of the members of my defined population and their authors.

then we can say that we are faced with an instance of indirect transmission, either by a fomite or a vector.

I propose to eliminate the category of fomite in favour of stipulating that any intermediate body counts as vector. Generally an epidemiologist will call an organism a vector and an inanimate object a fomite. We might therefore be tempted to apply this distinction by dubbing people as vectors and texts as fomites. But since texts are written by people there doesn't appear to be anything to be gained from this distinction.<sup>51</sup> Some people may be particularly effective vectors (as expert witnesses, for example) and we would certainly want to be able to identify them. Similarly, some texts (such as a thoroughly researched law review article) could be particularly effective in transmitting norms. We would want to identify these as well. There doesn't appear to be any *a priori* reason, though, to create separate categories to account for these two cases. They occupy the same functional role: a mediator between the common reservoir and a member of the primary population.

The only exceptions to my definition of a vector population are other members of the primary population, that is, other Canadian judgements. Though a vector population may be comprised of members who are instances of the same population *unit* as the members of the primary population, they cannot be in-

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<sup>51</sup> "But wait!" – an attentive reader might exclaim – "you argued *against* this in defining your population as texts rather than people!" There is no contradiction here. I defined the basic population unit of my primary population as texts, but this does not commit me to any particular definition of secondary or vector populations. Similarly, the definition "people living within a 1 km radius of pond *X*" for a malaria study does not imply that we must prefer "mosquitos" over "arthropods" or "insects" as a potential vector population.



cluded in the population *definition*.<sup>52</sup> In other words, citation of another Canadian judgement is not an instance of transmission from the U.S. reservoir (either directly or mediated by a vector) because it is an instance of transmission between members of the population.

The case of citation of another judgement initially appears to be a case of serial transfer: the infectious agent is transmitted from one member of the population to another. This ignores, however, the role that intermediate hosts might play in the transmission. First, the norm must *necessarily* pass through the author of the judgement, since judgements do not write themselves. Our description could therefore be refined such that judgement *A* is infected, read by the author of judgement *B*, and so on. I see no reason to add this refinement. Since all texts are written by authors, nothing is gained by stipulating that the author is an intermediate host; this would be like saying that a disease whose mechanism is handshaking passes by the intermediate host of hands! It may turn out that judgements written by some authors comprise a disproportionate percentage of the infected population. This would be an interesting finding and – as we shall see in Chapter 5 – for this reason, “authored by” is included in the list of characteristics that I use to profile the population. Be that as it may, this does not justify treating authors of judgement as intermediate hosts.

The same cannot be said of litigants and their attorneys, however. A judge’s attention is often turned to another judgement by the parties arguing the

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<sup>52</sup> See the example of a vector-based analysis of sexually transmitted diseases in s. 3.4.3 of Chapter 3.

case before her. Whereas it is axiomatic that all norms that appear in judgements have “passed through” the judges who author them, it is *not* the case that all norms that appear in judgements were pled by the parties. Evidently, there are other possible vectors through which the norms may be transmitted between members of the population. Some members of this second set of vectors may even also be vectors that mediate between members of the primary population and the reservoir of U.S. norms. For example, a law review article comparing Canadian and U.S. jurisprudence could act as a vector for both.

To summarize: transmission occurs when a judgement has direct or mediated contact with either (a) the reservoir of U.S. norms or (b) another member of the population of Canadian jurisprudence, and the best evidence for transmission is direct citation.

### 2.2.3. *Susceptibility of Members of the Population*

I have defined my population and set out what constitutes infection of a member thereof with a norm. I also hypothesized that there are four distinct ways in which a norm may come to infect a member of the population. I have not, however, explained which members of the population are subject to infection; that is, how the epidemiological notions of “susceptible” and “removed” are to operate in my model. This subsection deals with precisely that question, which – as we shall see – also requires a discussion of the epidemiological epochs of jurisprudential infection.

Formally, a susceptible is a member of the population who is neither infective nor removed and a removed is a member of the population who is neither infective nor susceptible. Since we have a working definition of what counts as infection, we know that susceptibles and removeds are all those decisions in the population that do not contain statements that refer to the U.S. norms. We still need to divide *this* set into two distinct subsets.

The first subset is that of susceptibles. The formal definition of the susceptible population is a precise way of formulating the notion that a susceptible is a member of the population who is not infective, but who may *become* an infective in the future. This appears difficult to apply to judgements, since once a judgement is rendered it is not subject to change, or at least not the kind of change that would render it infective.<sup>53</sup> Yet to say that a judgement has been infected with a norm seems to imply that there was some time  $t$  at which the judgement was not infective and some later time  $t+1$  at which it became an infective. How can this be?

The answer to this puzzle lies in delineating the different phases of judicial decision-making. A norm may infect a judgement (that is, it is likely to be the source of a statement that refers to it) only *prior* to the judgement being rendered. Thus, for instance, during litigation, the parties may attempt to persuade the judge that a norm should be included in the judgement; this is the nature of legal pleading. Similarly, during deliberation a judge may review existing caselaw and com-

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<sup>53</sup> Some decisions can be changed in order to correct clerical errors or errors in calculation (see, e.g. *Quebec Labour Code*, *supra* note 26 at ss. 100.12(e) & 126), but these changes are not of a nature such that they could affect the norms referred to.

mentary, reflect upon the arguments made at trial and so forth. The “decision-to-be” is thus susceptible until the very moment at which the decision is rendered. Obviously, there can be no “decision-to-be” until there is a dispute that has been set for trial. We can therefore stipulate that the period of susceptibility runs from the first day of hearing until such time as the decision was rendered. It follows that only decisions available for citation will be infective during the same period. Decisions would pass through a “latent period” that runs from the moment they are rendered to the moment of their publication. This allows us to set out the epidemiological epochs of infection within our population as in Figure 4-2.

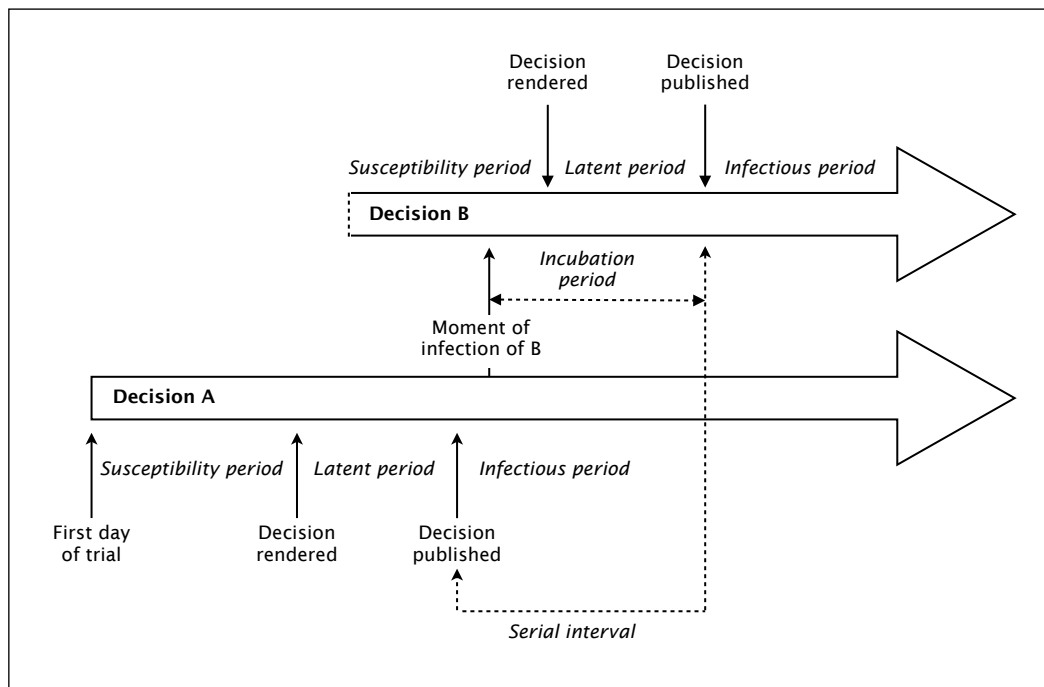


Fig. 4-2. Epidemiological epochs of legal decisions.

For completeness, I have included all of the epidemiological epochs,<sup>54</sup> though some of these periods are of little interest for my purposes. For instance, whereas the serial interval of a disease may be an important piece of evidence for determining its mechanisms of action and transmission, tracking the serial interval of judgements is not one of my research objectives. Certainly one could be interested in this question – we might want to know what the average “age” of decisions cited is. Similarly, data on the average susceptibility periods may tell us something about the efficiency of the judicial system. These are interesting questions: they are just not *my* question.

There are also some stages of the judicial process that are not indicated in Figure 4-2. For instance, I have not indicated a separate epoch covering the period from the last day of pleadings to the date of decision. In many jurisdictions, this period is set out in legislation<sup>55</sup> – though from personal experience I can attest that it is often not followed. Neither have I identified the phases of litigation that occur prior to the first day of trial. Empirical research on these periods is important; indeed, it informs many law reform efforts that try to implement Gladstone’s maxim that “justice delayed is justice denied”. Again, however, this is not my field of research.

The epoch I am interested in is the susceptibility period. Defining it as I propose, however, may cause some confusion which I will endeavour to clear up

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<sup>54</sup> See Figure 3-4 (Relations between epidemiological epochs) in Chapter 3.

<sup>55</sup> *E.g.* art. 465 C.C.P. (stating that “[a] judgement on the merits must be rendered within six months after the case is taken under advisement...”).

here. The potential confusion stems from the fact that I have defined my population as being comprised of Canadian decisions and my susceptible population as being “decisions to-be”. Since susceptibles are a subset of the population, it would seem that I have run into a problem, since “decisions to-be” are not (yet) decisions.

My solution to this problem is to retroactively dub “decisions to-be” as “decisions” within the meaning of my basic population unit once they have been rendered. This is not such a strange bit of *ad hoc* metaphysics as it may appear. We can compare this to the question of whether foetuses should be included as susceptibles in study of the spread of disease across a human population. In many cases we may want to include them, especially if – as is analogously the case in my model – infection may occur *in utero*. We might nevertheless want to *exclude* those cases where live birth did not occur. In this case, we would include foetuses in our population of susceptibles, but only retroactively after they have been born. Since all people have been foetuses at some point and since the average gestational period of humans is well-known, this poses no problems for our population definition. Incidentally, this is the same solution that is used in number of contexts in Canadian law, such as inheritance,<sup>56</sup> civil capacity,<sup>57</sup> and civil liability.<sup>58</sup>

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<sup>56</sup> *E.g.* 617 C.C.Q. (which provides that “...children conceived but yet unborn, if they are born alive and viable, may inherit”).

<sup>57</sup> *E.g.* 192 C.C.Q. (providing that “The father and mother are... tutors to their child conceived but yet unborn and are responsible for acting on his behalf in all cases where his patrimonial interests require it”) and 1814 C.C.Q. (providing that “Fathers and mothers or tutors may accept gifts made to minors or, provided they are born alive and viable, to children conceived but yet unborn”).

<sup>58</sup> See, *e.g.*, *Montreal Tramways Co. v. Léveillé*, [1933] S.C.R. 456; *Duval v. Seguin*, [1972] 2 O.R. 686 (H.C.), *aff'd* (1973), 1 O.R. (2d) 482 (C.A.). In both these cases it was held that an infant may sue for damages sustained while in the womb. But see, *Dobson (Litigation Guardian of) v. Dobson*, [1999] 2 S.C.R. 753 (declining to extend the principle of liability for damage caused *in utero* to mothers).

Having defined infectives and susceptibles, we are left with the question of how to account for the epidemiological category of removeds. Recall that a removed is a member of the population who is neither susceptible nor infective. This covers a large number of possibilities: immune persons, people who die or emigrate during the study time, *etc.* This set of decisions can thus be determined formally, by simply subtracting the susceptibles and infectives from the total number of decisions in a given time period. However, in epidemiological terms, removeds can also include members who were infective at some point and then ceased to be. For example, a person catches influenza and in whom the disease then runs its course and is totally cured starts as susceptible, becomes infective and then ultimately becomes removed. The analogous category in my population would be “infective decisions that will not be cited”. But there is no decision about which we can confidently assert this. Certainly decisions may be overturned, revoked, quashed, *etc.* but that does not stop them from being members of the population. Nor does it stop them from being cited in the future, either because they were overturned on questions unrelated to the norms for which they are cited or because some enterprising judge has decided to revive them after a change in public policy or social mores.

### **3. Conclusions and Hypotheses**

I covered a lot of ground in this chapter, moving from a summary of the field of epidemiology to the application of some of its key concepts to law. The results of this mapping constitute an epidemiological model of legal norm transmission. For

now though, the model is just a theoretical construct – a way of systematically cashing out the initial viral metaphor in (relatively) rigorous terms. It still needs to be applied.

In Chapters 5 and 6, I set out a methodology for applying the model – that is, for operationalizing its terms. This allows me to formulate and test some hypotheses about the phenomenon that is my object of study, namely the transmission of U.S. employment drug testing norms to the Canadian jurisprudence.

Though the exact formulation of these hypotheses depends both on that methodology and the data set that it generates, I can now restate some of the initial intuitions set out in Chapter 1 within the somewhat more precise language of the model. They are:

- (1) The law in the United States forms a reservoir of norms, some of which were transmitted to Canadian jurisprudence through direct contact and some of which were transmitted by vector;
- (2) The norms initially contracted from the reservoir began to spread horizontally across the Canadian jurisprudence through a process of serial transfer;
- (3) As the prevalence of cases of host-host transmission increased, the prevalence of cases of reservoir-host or reservoir-vector-host transmission decreased.



I underscore that theses are *hypotheses*. In Chapter 6, I test these hypotheses against the empirical data generated by the model. First, however, we need a methodology to operationalize the model and a data set to work with. It is to that task that I now turn.



**CHAPTER 5**  
**APPLYING THE MODEL (I):**  
**POPULATION AND INFECTION**

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## **Introduction**

In Chapter 1, I raised the problem of how to explain the transmission of employment drug testing norms from the United States to Canada. Chapter 2 proposed an epidemiological explanation, the model for which was constructed in Chapters 3 and 4. In this Chapter – which is both methodological and descriptive – I begin to apply the model to the case of drug testing norms. In the first section I operationalize the concepts mobilized in Chapters 3 and 4 to generate a detailed population profile. In the second section, I operationalize the notion of infection and then apply it to the profiled population.

### **1. Profiling the Population**

In Chapter 3, I explained how drawing a population boundary is the first step in creating a population profile. In Chapter 4, I defined the primary population unit of my study as legal texts and described my population as Canadian jurisprudence, the boundaries of which were initially delimited by written decisions rendered by tribunals constituted by a federal, provincial or territorial statute or authorized by such a statute to render binding decisions. I further restricted this to cover only such decisions that relate to the norms governing drug testing in the context of the employment relationship. In this section, I operationalize this definition and provide a complete population profile.

### 1.1. Operationalizing the Population Boundary

From my overview of the development of the Canadian jurisprudence relating to drug testing in the employment context,<sup>1</sup> some initial conclusions can be drawn that will help to profile the population. First, it points to a relevant survey period. There are no Canadian decisions – by any tribunal – that are related to drug testing in the employment context and were rendered prior to 1987.<sup>2</sup> Furthermore, since my principal hypothesis is that employment drug testing norms spread from the United States and it was in 1985 and 1986 that large scale employment drug testing began in that country, it makes sense to begin my data set shortly thereafter. Since a stable data set is needed to perform analysis, an end-date is also needed. Twenty years is an adequate period to observe the spread of the norms, if propagation there was. Given that the decisions in 1987 were rendered towards the end of the year, I decided to extend the survey period through 2007. My chosen population boundary can thus be traced on a time axis running from January 1, 1987 through to December 31, 2007, inclusively.

The overview also made me reasonably confident that the population is of manageable size and that there was therefore no need to resort to the use of sampling, which adds both methodological complexity and risks of error and distor-

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<sup>1</sup> In Chapter 1.

<sup>2</sup> The first decision is *Canadian Pacific Ltd. v. U.T.U. (Hutchinson grievance)* (1987) 31 L.A.C. (3d) 179; [1988] C.L.A.D. No. 61, CROA Case No. 1703 (M.G. Picher) [*Hutchinson* cited to CROA], which was rendered on October 15, 1987. But see text accompanying note 74 of Chapter 6 *infra* (discussion of an isolated earlier case as being part of a unique Canadian strain).

tion. The first step in profiling the population was thus to generate a data set containing *all* members of the population.

Data on my population was drawn from two sources: the online databases Quicklaw<sup>3</sup> and Azimut.<sup>4</sup> Two databases were required in order to cover decisions rendered by tribunals in all of the Canadian jurisdictions and in both English and French. My primary source for decisions rendered by tribunals from all of the provinces except Quebec and for decisions rendered in English by federal tribunals was Quicklaw. Azimut was my primary source for decisions rendered by Quebec tribunals and federal decisions published in French.<sup>5</sup>

#### *1.1.1. Generating a Data Set From Quicklaw*

Querying the Quicklaw database in order to generate a subset of decisions meeting the population definition required a balance to be struck. Too broad a query would result in a large pool of potential members of the population, requiring manual triage, which is both time-consuming and introduces risk of error. Too narrow a query would risk missing some members of the population, causing distortions in the data.

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<sup>3</sup> Published by LexisNexis. Available at [www.quicklaw.ca](http://www.quicklaw.ca) (subscription required).

<sup>4</sup>Published by the *Société québécoise pour l'information juridique* (Soquij). Available at <http://www.azimut.soquij.qc.ca> (subscription required).

<sup>5</sup> Federal tribunals are required by law to publish their decisions in both official languages (*Official Languages Act*, R.S.C. 1985, c. 31 (4th Supp.) at ss. 3(2) (defining “federal court” as “...any court, tribunal or other body that carries out adjudicative functions and is established by or pursuant to an Act of Parliament” & 20 (federal courts to render decisions, orders and judgements in both official languages)). In practice, however, decisions of some tribunals are only available in one language. This includes, notably, boards of arbitration constituted or enabled by s.57 of the *Canada Labour Code*, R.S.C. 1985, c. L-2.

Constructing a query also required me to operationalize the notions of “relating to” and “in the employment context”, which figure in my population description. By jurisprudence “relating to” drug testing norms, I mean for my population to include all decisions in which the practice of drug testing is explicitly or implicitly evaluated in accordance with a standard. A decision in which the results of a drug test are relied upon to come to a decision – but not explicitly discussed – would meet this criterion, since reliance on the results is implicit acceptance of the validity of the practice. Obviously, the paradigm case is a decision in which the primary issue at bar is the legality of a drug testing policy adopted. By “in the employment context” I mean decisions in which a contract of employment or collective agreement forms the basis for the legal relationship between the parties. Thus, though drug testing ordered by professional bodies<sup>6</sup> or as part of an impaired driving investigation<sup>7</sup> may have an impact on one’s employment, they are not cases that relate to drug testing “in the employment context” and are therefore not part of the population studied.

With these clarifications in mind, one of the elements of the query that can evidently be restricted without running the risk of missing members of the population is the deciding tribunal. Included in my Quicklaw search were the decisions of labour arbitration boards, labour relations boards, employment standards adju-

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<sup>6</sup> As in, *e.g.*, *Law Society of Alberta v. Saltman*, [1996] L.S.D.D. No. 301.

<sup>7</sup> Provided for by s. 254(3.4) of the *Criminal Code*, R.S.C. 1985, c. C-4.



dication boards, human rights tribunals, courts of general jurisdiction and courts of appeal.<sup>8</sup>

My first attempt sought to find all decisions rendered by one or another of the listed tribunals between January 1, 1987 and December 31, 2007, and in which the word “drug” was found within five words of “test” or “testing”. Using the truncation and automatic plurals function of Quicklaw, this would find decisions containing the phrase segments “drug test”, “drug testing”, “test for drugs” and “testing for drugs”. The query used was the following:

```
drug /5 (test!) AND DATE(>=1987) AND  
DATE(<=2007)
```

This returned over 2000 results, which is an order of magnitude larger than the expected data set. A quick survey of some of the cases returned revealed how the query was over-broad. The decision rendered by the Supreme Court of Canada in *R. v. Big M Drug Mart Ltd.*<sup>9</sup> is widely cited in subsequent jurisprudence as setting out the various “tests” of the constitutionality of a law *vis-à-vis* the Canadian *Charter of Rights and Freedoms*. Thus, a massive array of decisions having nothing to do with drug testing had the words “drug” and “test” within five words of one another!

One way to resolve this problem would have been simply to exclude those decisions citing the *Big M Drug Mart* decision. I rejected this strategy because it

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<sup>8</sup> For a detailed description of these sources, see Appendix 1: Data Sources.

<sup>9</sup> [1985] 1 S.C.R. 295 [hereinafter *Big M Drug Mart*].

would exclude some – many, even – members of my population. Many discrimination cases, including cases of employment discrimination based on drug addiction in which drug tests play a role, cite *Big M Drug Mart*. Therefore, my second – more refined – query sought to remedy this problem by narrowing the search to include only those decisions that referenced which drugs were tested for. The query used was the following:

```
drug /5 (test!) AND (marijuana OR marihuana OR
cannabis OR hashish OR cocaine OR heroin OR
amphetamine) AND DATE(>=1987) AND
DATE(<=2007)
```

This query thus included any decisions from the original results but added the additional requirement that one of the named drugs be found *somewhere* in the decision. The query returned 282 full text decisions, which were downloaded for further analysis and eventual inclusion.

### 1.1.2. *Generating a Data Set From Azimut*

One difference between the two database services used is the way in which they handle sources. Like Quicklaw, Azimut has a number of pre-set combined sources, but these databases are incomplete. Soquij makes editorial decisions as to whether to include cases (though many more are included than are in paper reporters) and creates summaries thereof. Since I wanted to search the raw unedited full text decisions, I could not use the combined sources. Fortunately, in the screens for querying the full text decision database Azimut allows for narrowing by tribunal through a simple check-box interface. I used this to restrict my results to

sources containing decisions of general law, labour and employment, and human rights from both provincial and federal jurisdictions.<sup>10</sup>

Having gone through the exercise once in Quicklaw, constructing a query in Azimut was relatively easy. I essentially used a direct translation of the keyword query adapted to Azimut's search syntax, which yielded:

(depistage PRES5 drogue) ET (marijuana OU marihuana OU cannabis OU haschisch OU cocaine OU heroine OU amphetamine) 19870101-20071231

This returned an acceptable 43 full text decisions, which were downloaded for further analysis and eventual inclusion.

### *1.1.3. Refining the Data Set*

After running both queries and downloading the resulting files, I was left with a total of 325 decisions. There were two ways in which this data set needed to be refined. First, duplicate decisions needed to be removed. In particular, decisions rendered by federal tribunals and published in both English and French were often (though not always) duplicated. In removing these decisions, I retained the untranslated version, when possible. That is, when a decision was written in French and then subsequently translated into English and published in both languages, I retained the French version in my population, and vice-versa. For those decisions where I was unable to deduce which language was the original, or which contained both languages (*e.g.* a Federal Court of Appeal decision may have a major-

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<sup>10</sup> For a detailed description of these sources, see Appendix 1: Data Sources.

ity judgement written in French and a dissent written in English and thus each published version is partially translated), I retained the English version.

The other way in which the data set needed to be refined was by removing decisions that were caught by one or another of the queries, but which did not meet the criteria set out in the population definition. This was done manually by skimming each individual decision in a word processor. The search function allowed me to quickly find where the keywords were located in the decision and appraise whether it counted as being related to drug testing in the employment context.

After removing the duplicates and those decisions that were not members of the population, I was left with a data set of 187 decisions.<sup>11</sup>

### *1.2. Descriptive Analysis of the Population*

Having operationalized the population boundary and generated a stable data set to serve as my population, the next step was to construct a descriptive profile of the population.

Thus far, the population is an undifferentiated mass. The criteria applied for tracing the boundary and deciding whether a given decision was included or not are unrelated to their infection status. All we can say about this population is that it is composed of 187 Canadian decisions rendered over roughly 20 years and

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<sup>11</sup> Thus, I only retained 57.54% (187/325) of the decisions. It could be argued that this is evidence of over-broad querying. However, I believe there is a higher potential for error introduced by an overly narrow query than by manual triage. For a detailed description of these sources, see Appendix 1: Data Sources. For the complete list of decisions in the population, see Appendix 2: List of Decisions in the Population.

that each of them relates to drug testing in the employment context. Given my objective of tracing the spread of norms through this population, I needed more detailed data that would allow me differentiate between members of the population on the basis of criteria related to spread. This is similar to having a study population of “all Canadian teenagers” but wanting to count them using criteria such as gender, age, place of residence, *etc.*, in order to both generate and test hypotheses about how a disease may spread across this population.

### 1.2.1. *Using Mixed-Method Data Analysis Software*

In describing my population, I wanted to be able to attribute particular properties to each decision and then look at the aggregate results. Once the population was profiled I wanted to be able to perform detailed queries of the *content* of each of the decisions and to correlate the results with the decisions’ properties.

It is conceivable that these tasks could be done by hand, for instance, by annotating decisions, putting them in different piles, *etc.*, and then recording observations. Indeed, in my experience, this is exactly the kind of thing that lawyers do when preparing jurisprudence before pleading a case. A decision that is “on point” might go on top of the pile of decisions to cite, but then get shuffled because it was rendered by a lower court, or a long time ago, *etc.* Such a methodology might be workable for up to twenty or so decisions, but with many more than that, there are simply too many variables and too many piles to keep straight. Similar problems face the social scientist who wants to analyse large quantities of documents:

Traditionally, social scientists might write notes on document margins, and use tape flags or paper clips to identify passages or concepts central to their analyses. While this enables researchers to extract content from (or more properly, add content to) source materials, the mechanical demands of the technique imposes limits on both the complexity and scale of analysis.<sup>12</sup>

Fortunately, software programs exist that perform exactly this kind of function in an semi-automated way. The software still requires the researcher to attribute the properties, but it can then rapidly sort the decisions according to those criteria. It can also be used to speed up the content analysis.

I chose to use the software package QDA Miner.<sup>13</sup> QDA Miner is a “mixed-method” data analysis software package; it is mixed because it allows for both quantitative and qualitative analysis of the same data set.<sup>14</sup> In QDA Miner, one can import a large number of documents into a single project file. Each document can be attributed properties and those properties can be analysed quantitatively. The content of the documents can also be analysed qualitatively. Other software packages that perform similar functions exist,<sup>15</sup> however QDA Miner

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<sup>12</sup> Ken Cousins & Wayne McIntosh, “More than Typewriters, More than Adding Machines: Integrating Information Technology into Political Research” (2005) 39 *Quality & Quantity* 581.

<sup>13</sup> Version 3.2, by Provalis Research.

<sup>14</sup> R. Barry Lewis and Steven M. Ma, “QDA Miner 2.0: Mixed-Model Qualitative Data Analysis Software” (2007) 19 *Field Methods* 87 [*QDA Miner*].

<sup>15</sup> See Cousins & McIntosh, *supra* note 12 for an exhaustive list.

promised to do everything I needed<sup>16</sup> and it is the only such software package for which the Université de Montréal has a licence.

### 1.2.2. *Attributing Properties to Each Decision*

All of the decisions were imported into a QDA Miner project file. The following properties were added to the database:<sup>17</sup>

- Name of the case as it appeared in caselaw reporter
- Name of the adjudicator
- Citation references
- Tribunal that rendered the decision;
- Jurisdiction
- Last date of hearing (if indicated)
- Date the decision was rendered
- Industry of the workplace subject to litigation

Each decision was then analysed and the appropriate information was added to the property fields associated with the decision. This was done manually. Each decision was skimmed on-screen, sometimes using the search function, to find the information and then that information was entered into the appropriate field.

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<sup>16</sup> Based on Normand Péladeau. *QDA Miner. Qualitative Data Analysis Software User's Guide*. (Provalis Research: Montreal, 2004), *QDA Miner, supra*, and Piotr Chomczynski, "Software Review: QDA MINER – The Mixed Method Solution for Qualitative Analysis by Provalis Research" (2008) 4:2 *Qualitative Sociology Review* 126.

<sup>17</sup> For a detailed list including data types, see Appendix 3: Variables, Data Types, and Codes.

### 1.2.2.1. *Jurisdiction, Tribunal and Industry*

The majority of the decisions were rendered by tribunals from one of three jurisdictions: the federal jurisdiction (24.069%),<sup>18</sup> Ontario (24.06%),<sup>19</sup> and British Columbia (22.99%).<sup>20</sup> Other well-represented jurisdictions were Alberta (12.30%),<sup>21</sup> and Quebec (9.63%).<sup>22</sup> The remaining nine jurisdictions accounted for less than a tenth of the decisions rendered (6.95%), with no decisions from Saskatchewan, Prince Edward Island, nor the three territories.<sup>23</sup>

These results seem to track population differences (*i.e.*, the number of people living under each jurisdiction), with some important exceptions. British Columbia may be over-represented in the data set because of the structure of its labour relations adjudication. In that province, the decisions of arbitrators can be appealed to the Labour Relations Board,<sup>24</sup> and even, in some cases, to the Court of Appeal.<sup>25</sup> Arbitrators in British Columbia can also refer any “question of labour relations policy or interpretation of [...the *Labour*] *Code*” to the Labour

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<sup>18</sup>  $n=45$ . All percentages are rounded to two decimal points.

<sup>19</sup>  $n=45$ .

<sup>20</sup>  $n=43$ .

<sup>21</sup>  $n=23$ .

<sup>22</sup>  $n=18$ .

<sup>23</sup> These include Manitoba ( $n=4$ ), Nova Scotia ( $n=5$ ), New Brunswick ( $n=3$ ), and Newfoundland & Labrador ( $n=1$ ). It is unsurprising that there are no decisions from the territories, since labour relations there are under the federal jurisdiction.

<sup>24</sup> *Labour Relations Code*, R.S.B.C. 1996, c. 244, s. 99.

<sup>25</sup> *Ibid.*, s. 100.



Board.<sup>26</sup> The Labour Board's decisions on appeals and references, as with all of its decisions, are subject to an application for reconsideration.<sup>27</sup> In contrast, arbitrators in other jurisdictions are covered by express<sup>28</sup> or implied<sup>29</sup> privative clauses that foreclose the possibility of appeal and do not allow for arbitrators to refer questions to labour boards. Thus, *ceteris paribus*, an equal number of disputes will likely create more decisions in British Columbia than elsewhere. The data confirms this in part,<sup>30</sup> though the higher number of labour board decisions rendered in British Columbia does not entirely account for its disproportionately high number of members of the population.<sup>31</sup>

The federal jurisdiction also appears to be over-represented. It represents over a quarter of the decisions rendered, whereas only about 6% of Canadian

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<sup>26</sup> *Ibid.*, s. 98.

<sup>27</sup> *Ibid.*, s. 141.

<sup>28</sup> See, *e.g.*, the Quebec *Labour Code*, R.S.Q. c. C-27 (providing that “[t]he arbitration award is without appeal, binds the parties and, where such is the case, any employee concerned”).

<sup>29</sup> See, *e.g.*, s. 48 of the Ontario *Labour Relations Act*, 1995, S.O. 1995, c. 1, Sch. A (providing that arbitrators decisions are to be “final and binding”).

<sup>30</sup> For instance, the arbitrator's award in *Fording Coal Ltd. v. United Steelworkers of America, Local 7884 (Reactor Grievance)*, (2001) 97 L.A.C. (4th) 289, [2001] B.C.C.A.A.A. No. 173, was appealed to the Labour Relations Board leading to the decision in *Fording Coal Ltd. (Re)*, (2001) BCLRB Decision No. B89/2001, [2001] B.C.L.R.B.D. No. 89, which was in turn subject to an application for reconsideration, leading to *Fording Coal Ltd. (Re)*, (2001) BCLRB Decision No. B173/2001, [2001] B.C.L.R.B.D. No. 173. Thus, a single dispute led to three decisions in British Columbia, but would likely only have led to one decision if rendered in another Canadian jurisdiction.

<sup>31</sup> The only other jurisdiction from which labour board decisions appear in the population is Ontario. This is largely due to the fact that s. 133 of the Ontario *Labour Relations Act*, *supra* note 29 provides that the labour board may act as a board of arbitration for unions and employers in the construction industry.

workers are employed in workplaces under federal labour jurisdiction.<sup>32</sup> As Table V-I shows, however, there is no clear explanation for this in terms of the structure of adjudicative bodies. The bulk of the federal decisions (as with all of the other jurisdictions) were rendered by boards of arbitration.

*Table V-I: Population by Jurisdiction and by Tribunal*

	BC	AB	MB	ON	QC	NB	NS	NF	Fed.	Total
<b>Labour Board</b>	4			4						<b>8</b>
<b>Public Service Board</b>						1			2	<b>3</b>
<b>Superior Court</b>		7		2	3		3		2	<b>17</b>
<b>Human Rights Tribunal</b>	3			2					4	<b>9</b>
<b>Arbitration</b>	35	15	4	37	12	2	2	1	31	<b>139</b>
<b>Court of Appeal</b>	1	1			1				1	<b>4</b>
<b>Employment Board</b>					2				5	<b>7</b>
<b>Total</b>	<b>43</b>	<b>23</b>	<b>4</b>	<b>45</b>	<b>18</b>	<b>3</b>	<b>5</b>	<b>1</b>	<b>45</b>	<b>187</b>

The explanation for the overrepresentation of both British Columbia and the federal jurisdiction is found when we look at the industries in which the dispute arose. Almost half of the decisions from the forestry industry are from British Columbia<sup>33</sup> and – more significantly – almost all of the decisions from the mining sector are from that province.<sup>34</sup> Together, these two industries account for almost half of the decisions from British Columbia.<sup>35</sup> Similarly, almost two-thirds of the decisions rendered by tribunals under the federal jurisdiction were from the transpor-

<sup>32</sup> Human Resources and Social Development, *Profile of Workplaces Under Federal Labour Jurisdiction* by Monique Bisailon and Derek Z. Wang (Ottawa: HRDSC Policy Development Division, Labour Program, 2006).

<sup>33</sup> 45.5%,  $n=5$ .

<sup>34</sup> 88.3%,  $n=15$ .

<sup>35</sup> 46.5%,  $n=20$ .

tation industry,<sup>36</sup> which is the second most strongly represented industry in the population.<sup>37</sup> These correlations are apparent in Table V-II.

*Table V-II: Population by Jurisdiction and by Industry*

	BC	AB	MB	ON	QC	NB	NS	NF	Fed.	Total
<b>Construction</b>	1	5		2		2			1	<b>11</b>
<b>Forestry</b>	5			5	1					<b>11</b>
<b>Manufacturing</b>	4	2	1	20	9		1		2	<b>39</b>
<b>Mining</b>	15	1			1					<b>17</b>
<b>Oil &amp; Gas</b>	1	9		3	1				2	<b>16</b>
<b>Public</b>	10	2	3	4	3	1	1	1	9	<b>34</b>
<b>Transportation</b>		2		5	2				28	<b>37</b>
<b>Other</b>	7	2		6	1		3		3	<b>22</b>
<b>Total</b>	<b>43</b>	<b>23</b>	<b>4</b>	<b>45</b>	<b>18</b>	<b>3</b>	<b>5</b>	<b>1</b>	<b>45</b>	<b>187</b>

A number of hypotheses and conclusions can be drawn from the distribution of decisions by industry and by jurisdiction.

First, other, than the categories “public” and “other”, all of the industries represented can be easily construed as having an important safety component. The risk that a workplace accident may have catastrophic consequences in the transportation, mining, and oil & gas industries in particular is self-evident. My initial survey of the jurisprudence in Chapter 1 showed that safety was an important part of the discourse around workplace drug testing, regardless of the actual

<sup>36</sup> 62.2%,  $n=28$ . This is to be expected, given the federal jurisdiction over both inter-provincial and international transport by virtue of s. 92(10)(a) (*a contrario*) of the *Constitution Act, 1867*. See also, s. 2(b) of the *Canada Labour Code*, *supra* note 5.

<sup>37</sup> 19.8% ( $n=37$ ) of the population are decisions from the transportation industry; slightly less than manufacturing ( $n=39$ ) and slightly more than the public sector ( $n=34$ ).

empirical relationship between accidents and drug testing (which, recall, is tenuous). The distribution of my studied population across industries tends to confirm this. That is, regardless of whether the American norms are in fact adopted in any of these decisions (*i.e.* their infection status) the very fact that the question of drug testing arises in them (*i.e.* their susceptible status) indicates the importance of safety discourse in determining the legal outcomes. Furthermore, it is unsurprising that the mining industry should be over-represented, since mines are the only Canadian employers authorized by legislation to search their employees for drugs.<sup>38</sup>

Second, the preponderance of decisions from the transportation industry supports the hypothesis that this industry is important in explaining the spread of the norms from the United States to Canada. Again, this property of the population does not in itself prove spread, since it says nothing of infection status. Nevertheless, it bolsters the hypothesis that the industry played a crucial role, since it represents an important part of the susceptible population.

#### 1.2.2.2. *Adjudicator*

All things being equal, one would expect that, within a population, the statistical distribution by adjudicator should be relatively even. This may be the case for large populations of jurisprudence, especially rendered by courts of general jurisdiction where no variable, other than the prolificacy of particular judges, is likely

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<sup>38</sup> See, *e.g.* s. 143 of the *Coal Mining Occupational Health and Safety Regulations*, SOR/90-97. See also s. 38(2) of the *Mines Act*, R.S.B.C. 1996, c. 293.

to correlate strongly with the number of decisions rendered.<sup>39</sup> However, where the adjudicator is chosen by the parties, there is no reason to expect an even distribution across a body of jurisprudence. Indeed, two standard justifications for the consensual choosing of adjudicators tend to support the opposite view. First, adjudicators may develop specializations – for instance in particular kinds of disagreements or particular contexts – and parties may call upon them to resolve these kinds of disputes more often precisely because they are so specialized. The *content* of the decisions in a body of jurisprudence may thus be correlated with adjudicator. Second, parties may routinely call upon the same adjudicator to arbitrate their disputes, either because that adjudicator has developed a high level of trust through past decisions or simply to avoid the transaction costs of finding someone agreeable to both parties. In these cases, the *parties* to a decisions in a body of jurisprudence may be correlated with adjudicator.

The studied population confirms the hypothesis that adjudicators are evenly distributed across the jurisprudence where the parties do not choose their own adjudicator. When arbitral awards are excluded from the population, adjudicators are *exactly* evenly distributed; each adjudicator has rendered exactly one decision.<sup>40</sup>

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<sup>39</sup> Even in these cases, either the internal organization of the adjudicative body (*e.g.* distribution of cases by the chief justice) or strategic behaviour by litigants (*e.g.* choice of venue), may have *some* impact on the distribution of decisions by adjudicator.

<sup>40</sup> This assumes that, where a panel rendered a decision, every member thereof rendered it. It does not account for divided judgements. A more precise formulation is that there are 51 decisions rendered by tribunals other than boards of arbitration and that no adjudicator participated in rendering more than one decision.

The inverse is also true. The distribution of adjudicators across the arbitral jurisprudence is *not* even. The 139 arbitration decisions were rendered by 90 different arbitrators, for an average of 1.5 decisions per arbitrator, with most arbitrators rendering one<sup>41</sup> or two<sup>42</sup> decisions. Three arbitrators, however, accounted for a disproportionate share of the decisions: A.V.M. Beattie,<sup>43</sup> H.A. Hope<sup>44</sup> and M.G. Picher.<sup>45</sup> These three comprise three percent of the arbitrators, yet their decisions comprise 15.83% of the decisions rendered by arbitrators.<sup>46</sup> Of particular

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<sup>41</sup> 70.0% of arbitrators ( $n=63$ ), which accounts for 45.3% of the decisions.

<sup>42</sup> 21.1% of arbitrators ( $n=19$ ), which accounts for 27.3% of the decisions ( $n=38$ ).

<sup>43</sup> 3.60% ( $n=5$ ). They are: *Construction Labour Relations (Carpenters Provincial Trade Division) v. United Brotherhood of Carpenters and Joiners of America, Local 1325 (Hewitt Grievance)* (2001), 96 L.A.C. (4th) 343, [2001] A.G.A.A. No. 29; *Muskeg River Contractors v. International Brotherhood of Teamsters (Pliska Grievance)*, (2002) 115 L.A.C. (4th) 419, [2002] A.G.A.A. No. 92; *Construction Labour Relations (Alberta Assn. Operating Engineers (Provincial) Trade Division) v. International Union of Operating Engineers, Local 955 (Graham Grievance)* (2002), 129 L.A.C. (4th) 1, [2004] A.G.A.A. No. 40; *Trace Canada Co. v. International Assn. of Heat and Frost Insulators and Asbestos Workers, Local Union No. 110 (Young Grievance)*, [2004] A.G.A.A. No. 68; *Telus v. Telecommunications Workers Union (H.S. Grievance)*, (2004) 91 C.L.A.S. 67, [2007] C.L.A.D. No. 289.

<sup>44</sup> 4.32% ( $n=6$ ). They are: *Canadian Pacific Railway (Mechanical Services) and C.A.W., Loc. 101 (Pollock) (Re)*, (1996) 59 L.A.C. (4th) 324, [1996] C.L.A.D. No. 1208; *Fording Coal Ltd. v. United Steelworkers of America, Local 7884 (Shypitka Grievance)*, [2000] B.C.C.A.A.A. No. 393 (Preliminary Award); *Fording Coal Ltd. v. United Steelworkers of America, Local 7884 (Shypitka Grievance)* (2000) 94 L.A.C. (4th) 354, [2001] B.C.C.A.A.A. No. 24; *Fording Coal Ltd. v. United Steelworkers of America, Local 7884*, [2002] B.C.C.A.A.A. No. 9; *Vancouver Shipyards Co. v. United Assn. of Journeymen and Apprentices of the Plumbing and Pipefitting Industry, Local 170 (Moore Grievance)*, [2005] B.C.C.A.A.A. No. 296; *Vancouver Shipyards Co. v. United Assn. of Journeymen and Apprentices of the Plumbing and Pipefitting Industry, Local 170* (2005) 156 L.A.C. (4th) 213; [2006] B.C.C.A.A.A. No. 186.

<sup>45</sup> 7.91% ( $n=11$ ). They are: *Hutchinson, supra note 2*, *Canadian National Railway Co., and United Transportation Union (Keeping Grievance)*, (1988) 6 L.A.C. (4th) 381, [1989] C.L.A.D. No. 4; *Canadian National Railway Co. and U.T.U. (Re)*, (1990) 11 L.A.C. (4th) 364, [1990] C.L.A.D. No. 14; *CP Rail and C.A.W., Loc. 101 (Re)*, (1990) 22 L.A.C. (4th) 164, [1991] C.L.A.D. No. 22; *Canada Post Corp. v. Canadian Union of Postal Workers (Larmon Grievance)*, [1993] C.L.A.D. No. 978; *Canadian National Railway Co. and B.M.W.E. (Ouellette) (Re)*, (1998) 75 L.A.C. (4th) 300, [1998] C.L.A.D. No. 1003; *Canadian National Railway Co. and National Automobile, Aerospace, Transportation and General Workers Union of Canada (CAW-Canada), (Re)* (2000) 95 L.A.C. (4th) 341, [2000] C.L.A.D. No. 465 [CN & CAW]; *J.D. Irving Ltd. v. Communications, Energy and Paperworkers' Union, Local 104 and 1309 (Drug and Alcohol Policy Grievance)*, (2002) 111 L.A.C. (4th) 328, [2002] N.B.L.A.A. No. 7; *Imperial Oil Ltd. v. Communications, Energy and Paperworkers Union of Canada, Local 900 (Lussier Grievance)*, (2005) 138 L.A.C. (4th) 122, [2005] O.L.A.A. No. 213; *Canadian Pacific Railway Mechanical Services v. National, Automobile, Aerospace, Transportation and General Workers Union of Canada (CAW-Canada), Local 101 (Wolanicki Grievance)*, (2006) 87 C.L.A.S. 317, [2006] C.L.A.D. No. 449.

<sup>46</sup>  $n=22$ . This represents 11.76% of the entire population.

note is Arbitrator Picher, who rendered eleven decisions related to drug testing in the employment context between 1987 and 2007.

Recall that Arbitrator Picher rendered the very first decisions that discussed the legality of employment drug testing, the first that linked safety to drug use, and the first that explicitly referenced the U.S. norms.<sup>47</sup> Seven of the eleven decisions rendered by Arbitrator Picher applied to the transportation industry,<sup>48</sup> to wit the railroad industry, which I have identified as a potential “point of infection”. All of these details tend to strengthen the hypothesis that Arbitrator Picher acted as an important vector and secondary host for the U.S. norms.

### 1.2.2.3. *Plotting the Population Over Time*

The population of decisions differs from most populations in epidemiology in that there are no removeds. A population of living individuals generally increases by birth and immigration and decreases by death and emigration. Over time, the size of the population can thus either remain stable, grow, or shrink. In contrast, my population is destined to a continual increase in size over time.<sup>49</sup> In addition to this increase in absolute size over time, however, the data shows a general increase in the *rate* of growth of the population. That is, the number of decisions related to employment drug testing in Canada rendered during a given year of the

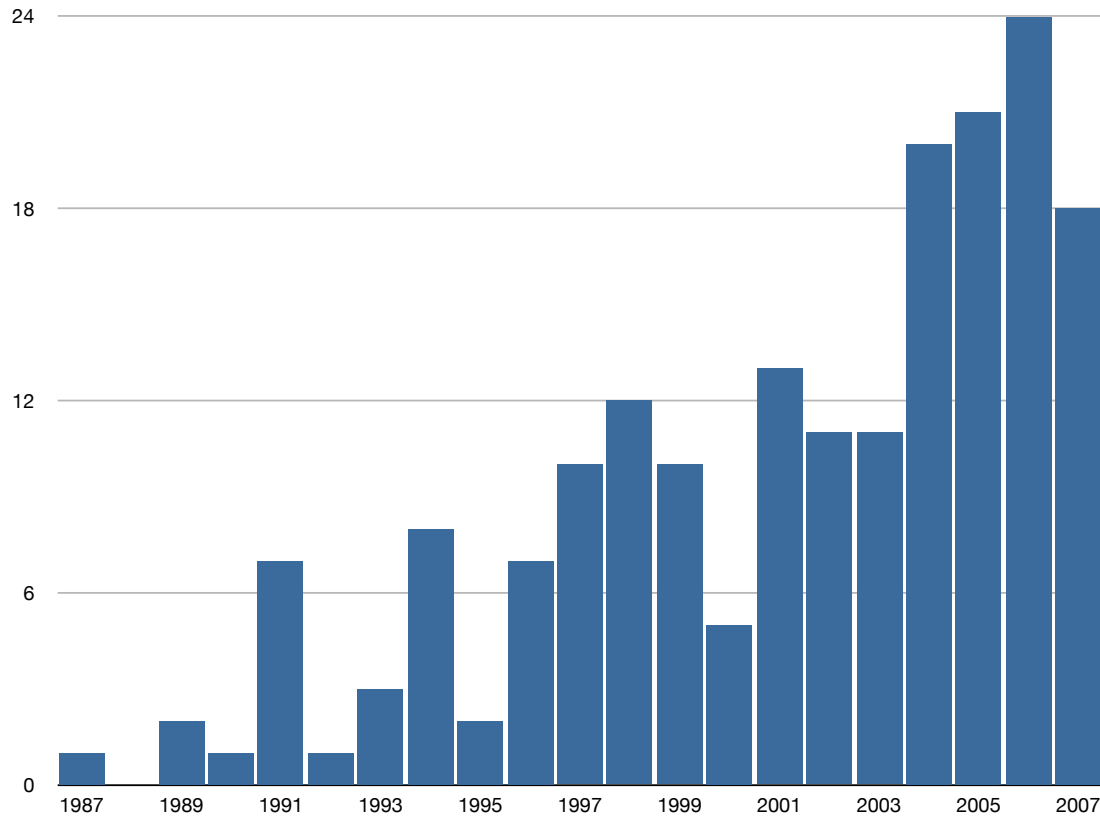
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<sup>47</sup> See s. 2.2.1.2 of Chapter 1.

<sup>48</sup> Arbitrator Picher thus rendered close to a third (29.73%) of the decisions in this industry.

<sup>49</sup> This is because, as we saw in s. 2.2.3 of Chapter 4, there are no decisions about which we confidently state they will never be cited in the future..

study period tended to be greater than the number of decisions rendered in each of the previous years. Figure 5-1 illustrates this phenomenon.



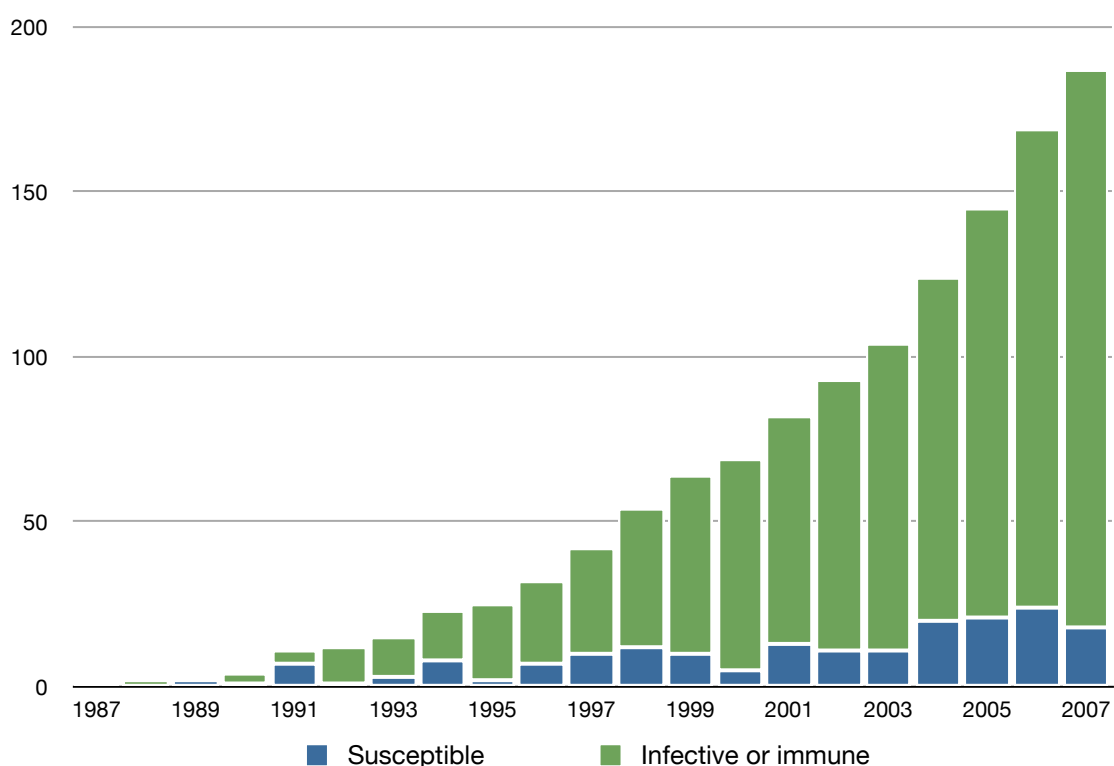
*Fig 5-1: Number of decisions rendered per year*

What is evident here is that the question of the legality of drug testing in the employment context was not a major issue in the late 80s and early 90s, but that by 1997 it had become sufficiently important to generate upwards of one decision every month.

Since no decision was removed and since the rate of new decisions rendered tended to increase, the size of the population increased geometrically with the result that pleaders had a larger and larger corpus of caselaw to plead. On the



other hand, while the size of the population continued to increase, the proportion of susceptibles decreased substantially.<sup>50</sup> This is because a decision's infection status cannot change once it is rendered. If it was infected, it will forever remain an infective; if it was not infected, then it will be forever immune. The reduction of the relative size of the susceptible population, compared to the whole population can be seen in Figure 5.2.



5-2: Total and susceptible population sizes over time

This will be important to keep in mind while evaluating cumulative incidence, which, as we saw in Chapter 3, is distinguished from prevalence precisely in that it is a measure of the number of susceptibles that become infected during a given

<sup>50</sup> This is the case despite the rate of population growth.

time period, rather than the total number of infectives as a proportion of the entire population.<sup>51</sup>

Plotting decision variables over time does not reveal any strong trends. After an initial period of instability, the proportion of decisions rendered in each industry remains relatively stable from the early 1990s onwards. Consonant with the historical narrative set out in Chapter 1, the transportation sector accounts for the vast majority of decisions at the beginning of the study period and decreases steadily to about one quarter of decisions in 1993, where it remained.

When the proportion of decisions rendered in each jurisdiction is analysed, no clear trend emerges, with the exception of Quebec. Whereas decisions from Quebec comprise almost a tenth of the total population,<sup>52</sup> the first decision from Quebec was not rendered until 2003.<sup>53</sup> The proportion of decisions from Quebec as a percentage of the total population is thus flat at zero and increases very sharply in 2003.

### 1.3. Conclusions

The general picture of the population is of one that is constantly growing and in which the number of members susceptible to infection increases over time in absolute terms but decreases relative to the overall population size.

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<sup>51</sup> See notes 14 and 16 of Chapter 3.

<sup>52</sup> 9.63%,  $n=18$ .

<sup>53</sup> *Union des chauffeurs de camions, hommes d'entrepôt et autres ouvriers, Teamsters Québec, section locale 106 c. Transport Midland liée (grief de Metcalfe)*, (2003) D.T.E. 2004T-85.

In terms of tribunals, the profile of the population shows that arbitration awards comprise almost three quarters of the decisions rendered.<sup>54</sup> Within this category, one arbitrator in particular stands out: Michel G. Picher. Arbitrator Picher rendered the first infected decisions. One variable that may thus correlate to infection status is the tendency or not of a decision to cite one of Arbitrator Picher's decisions.

The profile also shows that the transportation industry is over-represented. This variable thus present itself as a candidate for correlation with infection status, especially given the role of Arbitrator Picher in the transportation industry jurisprudence.

In order to analyse the existence of such correlations, however, the infection status itself must be operationalized in such a way as it can be measured over time. Doing so, and then testing the results against the hypotheses set out above is the subject of the next section.

## **2. Measuring Infection**

One of the functions of the model is to test the hypothesis that the drug testing norms were transmitted from the U.S. to the Canadian jurisprudence. Having operationalized the notion of population in terms of the model, the next step is to operationalize the notion of infection. This will provide the basis for the measurement of spread over time.

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<sup>54</sup>  $n=139$  (74.33%).

### 2.1. Operationalizing Infection

Recall that in Chapter 4, I modelled the distinction between asymptomatic carriers and full-blown cases. Whereas both categories include decisions that refer to the studied norm, the former include those decisions that only mention the norm, whereas the latter include those decisions in which the norm functions as an edict. In operationalizing infection I will remove this nuance. Evidently, “functions as an edict” is a property of texts that is interpretatively ascribed. That is, to understand whether a tribunal has applied a legal norm or merely mentioned it, we must read the decision carefully. Such careful reading is not possible using the methodology proposed here, which relies upon computer assisted text processing.

There is a more important reason for jettisoning the carrier/case distinction however, which reveals a way in which the epidemiological notion of infection resists a complete transposition to legal texts. One aspect of this disanalogy can be teased out by looking at the role that precedent plays in adjudicative decision making. In its most orthodox formulation, the rule of precedent is part of a fiction of legal immutability. The doctrine of *stare decisis* goes hand in hand with the idea that judicial decisions are declaratory and not legislative and thus the common law is as it was and as it will be; the judicial decision is merely an opportunity for discovering the law or dissolving the illusions of its apparent contradictions.<sup>55</sup> Though this orthodox formulation is now rarely defended, precedent still plays an

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<sup>55</sup> For a discussion of the weaknesses, but also the strengths, of this approach, see Oliver Wendell Holmes Jr. “The Path of the Law” (1897) 10 Harvard L. Rev. 457. See also Benjamin N. Cardozo, *The Nature of the Legal Process* (Yale University Press: New Haven, 1921) *esp.* at 27-28 and 138-61.

important role in adjudicative decision making, even in contexts where its application is not clearly mandatory.<sup>56</sup>

Regardless of whether the rule of precedent is taken as an orthodoxy upon which rests the legitimacy of the law or simply as a guideline to be kept in mind by the responsible adjudicator, it conveys an unrealistic conception of the constraints put on decision makers. It is unrealistic from a psychological perspective, since adjudicators are bound to be motivated by conscious and subconscious forces that colour or even determine their interpretation of previous cases.<sup>57</sup> It is also unrealistic from a semantic perspective: no formulation of a norm is so clear as to constrain all further interpretations and application thereof.<sup>58</sup>

There is nothing particularly new in pointing out the contingency of decision making despite the rule of precedent; indeed it is a staple topic of every introductory course on legislative interpretation.<sup>59</sup> Highlighting the problem, however, allows us to think about the way infection is transposed in the model, and to understand why I limit infection status to mere appearance of the studied norms.

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<sup>56</sup> See, e.g., *Domtar Inc. v. Quebec (Commission d'appel en matière de lésions professionnelles)*, [1993] 2 S.C.R. 756, 105 D.L.R. (4th) 385, 15 Admin. L.R. (2d) 1 (Holding that consistency is an important principle of law even though “a certain lack of unanimity is the price to pay for the decision-making freedom and independence” afforded to administrative tribunals).

<sup>57</sup> Cardozo, *supra* note 55 at 162 and *ff.*

<sup>58</sup> A classic discussion of this can be found in H. L. A. Hart, “Positivism and the Separation of Law and Morals” (1958) 71 *Harvard L. Rev.* 593 and Lon L. Fuller, “Positivism and Fidelity to Law – A Reply to Professor Hart (1958) 71 *Harvard L. Rev.* 630. For a more recent discussion, see Ronald Dworkin, *Law's Empire* (Harvard University Press: Cambridge, Mass., 1986).

<sup>59</sup> See, e.g. Bernard W. Bell, “No Motor Vehicles in the Park: Reviving the Hart-Fuller Debate to Introduce Statutory Construction” (1998) 48 *J. Legal Educ.* 88; Roderick A. Macdonald and Jason Maclean, “No Toilets in Park” (2005) 50 *McGill L.J.* 721.

In particular it underscores the fact that a case's infection status is an interpretative ascription and not an intrinsic property. What to me is a clear example of an adjudicator applying a norm may, to another interpreter, be an example of rhetorical flourish that is contradicted by a statement elsewhere in the decision that is its "true" *ratio decidendi*. This is not necessarily a bad thing; indeed, the same can be said of disease.<sup>60</sup> My intention here, however, is to attempt to measure appearance of the norms quantitatively, and not to make arguments about legal etiology (*i.e.* the standard kind of close reading associated with doctrinal caselaw analysis). All decisions in which the norms are expressed will therefore be counted as infected.

The norms that – by hypothesis – have infected the Canadian jurisprudence relating to drug testing in the employment context (*i.e.* the studied population) are the U.S. norms, which I described in Chapter 1.<sup>61</sup> These norms allow employers to require their employees to undergo drug testing – on pain of discipline for refusal – where (1) the employer has reasonable grounds to believe the employee was impaired by drugs at work, or (2) the employee was involved in a workplace accident. Furthermore, an employer may require ongoing random testing when (3) an employee has been reinstated after an absence occasioned by drug use. Operationalizing infection requires us to stipulate criteria for sorting decisions into those that contain statements that refer to these three norms.

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<sup>60</sup> Georges Canguilhem, *Le normal et le pathologique*, 10<sup>th</sup> ed. (Paris: P.U.F., 2006).

<sup>61</sup> See text accompanying note 126 in Chapter 1.

### 2.1.1. *Decision Properties and Decision Contents*

As I discussed above,<sup>62</sup> QDA Miner allows for the analysis of both *properties* of decisions (through the attribution of variables) and their *contents*. Profiling the population was a matter of attributing variables and then analysing their distribution. Identifying infectives, on the other hand, requires an analysis of the actual text of each decision.

This distinction between properties and contents of decisions can be seen as tracking the distinction between quantitative and qualitative data analysis. On this view, profiling the population is a quantitative matter and determining the infection status of its members is qualitative. This is true in the sense that there is no room for the researcher's interpretation in determining the values of the variables used to profile the population. A decision was rendered on a definite date by a particular tribunal with authority over a specific parties in a given jurisdiction. Conversely, whether to count a phrase as "referring to" or "expressing" a norm is a paradigmatically interpretative exercise.

There is, however, a sense in which the counting of infectives is *not* qualitative data analysis. This is because once the interpretative work of determining infection status is done, the results are to be analysed quantitatively. Some researchers would exclude such a practice from their definition of qualitative analysis. For instance, one standard textbook defines qualitative research as follows:

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<sup>62</sup> See s. 1.2.1.

[A]ny type of research that produces findings not arrived at by statistical procedures or other means of quantification... Some of the data may be quantified as with census or background information about the persons or objects studied, but the bulk of the analysis is interpretative. Actually the term “qualitative research” is confusing because it can mean quite different things to different people. *Some researchers gather data by means of interviews and observations, techniques normally associated with qualitative methods. However they code the data in a manner that allows them to be statistically analyzed. In speaking about qualitative analysis, we are referring not the quantification of qualitative data but rather to a non-mathematical process of interpretation...*<sup>63</sup>

My intention here is not to favour any particular demarcation of the line between quantitative and qualitative research. The point I wish to make is that the determination of infection status requires a methodology somewhat different from the methodology used in profiling the population.

One way to discover infection status would be to read each of the decisions individually. A variable representing each of the three norms could be associated with each decision and then the value for that variable could be manually entered. The obvious drawback to this approach is the time required to read over the thousands of pages of text that comprise the 187 different decisions of the population. Such time constraints represent more than just an inconvenience. In order to properly count infectives, the criteria for determining infection status may have to be refined several times. With each refinement, the decisions must be analysed anew and with each reading a new refinement is possible. In other words, qualita-

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<sup>63</sup> Anselm Strauss & Juliet Corbin, *Basics of Qualitative Research*, 2<sup>nd</sup> ed. (Thousand Oaks Ca: Sage, 1998) at 10-11 [emphasis added].



tive data analysis is iterative and thus virtually impossible to do manually on a large corpus.

Furthermore, manual treatment of the data runs the risk of introducing error. For instance, there is the risk that instances of infection will simply be overlooked. As with any manual data entry process, there is also the possibility of transcription errors.

For these reasons, I chose to use the qualitative analysis functions of QDA Miner to assist me in assigning infection status to each of the members of the population.

#### 2.1.2. *Coding Decisions Using Keyword Retrieval*

Coding is a process whereby variables (“codes” or “tags”) are assigned to segments of text of a fixed or variable length. The assigned codes can then be taken as proxies for the text segments to which they have been assigned. Analysis of the codes ought thus to apply also to the texts. For instance, codes can be analysed in terms of their relative or absolute frequency or their correlation with other codes or with case variables. Coding is a common technique used in content analysis, a form of qualitative data analysis often used to assess interview data and observation reports,<sup>64</sup> but which can be more generally defined as “any technique for

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<sup>64</sup> See, e.g. Strauss & Corbin, *ibid.*

making inferences by objectively and systematically identifying specified characteristics of messages.”<sup>65</sup>

There are multiple ways to create and assign codes to the elements of a text corpus using QDA Miner. I chose to manually create codes representing each of the three elements of infection: (1) FOR\_CAUSE, (2) POST\_ACCIDENT, and (3) REINSTATEMENT. I then assigned keywords to each of the codes.<sup>66</sup> The QDA Miner User’s Guide explains the utility of this approach as follows:

QDA Miner allows one to attach to any code in the codebook a list of words, word patterns and key phrases that are likely to be found in segments where such a code may apply. For example, if you have a code named Globalization, you may enter words like “Free Trade”, “World Trade”, “NAFTA”, or “WTO”. Once these keywords have been entered, the Keyword Retrieval feature may be used to search for any text segment that contains any one of those words. In a sense, a list of keywords is a kind of pre-defined search that is stored with a code within the codebook.<sup>67</sup>

Thus, once the keywords were associated with the codes, the entire corpus could be searched to generate a list of text segment candidates for coding.

Though QDA Miner can automatically assign codes to the text segments retrieved using the associated keywords, I chose to assign the codes manually.

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<sup>65</sup> Ole R. Holsti, *Content Analysis for the Social Sciences and Humanities* (Reading, MA: Addison-Wesley, 1969) at 14. For an overview, see Robert P. Weber, *Basic Content Analysis* (Thousand Oaks Ca: Sage, 1990).

<sup>66</sup> For a list of the keywords associated with each code, see Appendix 3: Variables, Data Types and Codes.

<sup>67</sup> *QDA Miner Qualitative Data Analysis Software User’s Guide* (Montreal: Provalis Research, 2009) at 79 [*QDA Miner Guide*]. “codebook” is the term used to describe the collection of codes associated with a given project file.

This sacrifices some speed to ensure greater accuracy. QDA Miner facilitates the task by generating a “Coding Table View”, which consists of a table two columns wide (one for the retrieved segment and one for the applied code) containing as many rows as retrieved text segments (see Figure 5-3). The codebook is displayed on the same screen as the coding table. Each returned segment can thus be easily and rapidly verified (the keywords are highlighted) and then coded with a single click.

The screenshot shows a software window titled "Coding Table - 958 rows". On the left is a tree view of a codebook with categories like JURISDICTION, JUSTIFICATION, VECTOR, and INFECTION. The main area is a table with two columns: "Text" and "Codes". The "Text" column contains various segments of text, some with keywords like "FOR CAUSE", "PROBABLE GROUNDS", and "REASONABLE CAUSE" highlighted in red. The "Codes" column contains codes such as "(within For cause testing)", "Policy (overlaps For cause testing)", and "(within For cause testing)".

Text	Codes
voluntarily, is discharged <b>FOR CAUSE</b> , or under certain	
ii) À ne pas s'absenter sans <b>MOTIF</b> valable. L'EMPLOYÉ devra, pour toute absence motivée par la maladie, présenter à l'EMPLOYEUR un certificat médical avec diagnostic, signé par un médecin, le jour même de l'absence, et ce, pour une période de 24 mois débutant le premier jour de son retour au travail, le tout sans égard aux règles de la convention collective. Aucune absence reliée à la toxicomanie ne sera justifiée;	
i) the Arbitrator exceeded his jurisdiction, and/or made a patently unreasonable error of law by concluding the Respondent [Employer] had reasonable and <b>PROBABLE GROUNDS</b> to insist the Grievor submit to a drug test.	(within <b>For cause testing</b> )
ii) If the Employer has reasonable and <b>PROBABLE GROUNDS</b> to believe that the Employee is unfit for work due to an intoxicated state, whether by drugs or alcohol.	(within <b>For cause testing</b> )
given just and <b>REASONABLE CAUSE</b> for some form of	
d. WILL REFER THE EMPLOYEE FOR AN ALCOHOL AND DRUG TEST IN A <b>REASONABLE CAUSE</b> SITUATION AS AND WHEN REQUIRED TO DO SO UNDER THIS POLICY (Section VI-E);	(within <b>For cause testing</b> )
concerned the imposition of mandatory drug and alcohol urinalysis for truck drivers. The policy in question was mandatory, universal and not triggered by any <b>REASONABLE CAUSE</b> to suspect a particular driver of substance abuse or impairment. The arbitrator drew an analogy to employee theft issues where employer searches must be reasonably balanced against the employees' rights to privacy. The arbitrator said, at p. 422:	<b>Policy</b> (overlaps <b>For cause testing</b> )
c) Where <b>REASONABLE GROUNDS</b> exist to suspect the involvement of drugs or alcohol in an incident.	
b) Was the Arbitrator's decision that there were <b>REASONABLE GROUNDS</b> to demand a drug screening test patently unreasonable?	
a. <b>REASONABLE CAUSE</b> : Referral for an alcohol and drug test is NOT MANDATORY, BUT IS ONE OF A NUMBER OF POSSIBLE OPTIONS WHERE <b>REASONABLE CAUSE</b> EXISTS to suspect alcohol or other drug use or possessions in violation of this policy. IN A <b>REASONABLE CAUSE</b> SITUATION, THE DECISION TO TEST SHALL BE MADE BY A SUPERVISOR OR MANAGER, WITH CONCURRENCE OF A SECOND PERSON wherever possible (medical, EAP, legal, security, another supervisor or person on site).	(within <b>For cause testing</b> )
a) Évaluation volontaire/réadaptation - Aucun employé ayant un problème lié à l'alcool ou à la drogue ne peut faire l'objet de mesures disciplinaires s'il demande, de plein gré, de l'aide afin de surmonter son problème, à la condition que sa demande soit faite avant qu'il n'est été avisé de se soumettre à des tests en vertu de la présente politique.	

Fig 5-3. The QDA Miner coding table view

The Coding Table View provides a keyword-in-context list (a so-called “KWIC list”) which provides an inventory of the “linguistic environment” in which the keywords are found.<sup>68</sup> The KWIC list can not only be used to verify that the retrieved segments effectively represent the desired textual characteristics prior to

<sup>68</sup> Klaus Krippendorff, *Content Analysis: An Introduction to its Methodology*, 2<sup>nd</sup> ed. (Thousand Oaks Ca: Sage, 2004) at 266.

assigning codes, it can also lead to refinement of the chosen keywords for subsequent coding.<sup>69</sup> For example, consider the three following elements<sup>70</sup> from the KWIC list returned by a query for “reasonable grounds”, which is one of the key phrases attached to the code FOR\_CAUSE:

Where there are no <b>REASONABLE GROUNDS</b> to suspect impairment or drug dependency, the employee’s privacy rights must take precedence.
The effect of the requirement that an employer must have <b>REASONABLE GROUNDS</b> to suspect impairment is to require objective evidence of impairment before testing is justified.
The arbitrator found that while a dismissal is a very serious matter and that this consideration favoured the extension, the other factors favoured the Employer. Without more, he reasoned, consideration of these factors would not provide <b>REASONABLE GROUNDS</b> for extending the time.

At a glance, we can tell that the first two segments are genuine candidates for the FOR\_CAUSE code, whereas the third one is not. Furthermore, the second segment suggests that “evidence of impairment” might be useful to add to the list of key phrases attached to the FOR\_CAUSE code.

Each of the text segments in the KWIC list above is one paragraph long (though evidently the length of the paragraphs varies). The keyword retrieval function of QDA Miner allows one to choose the length of the text segments returned by a query. This is called the “search unit” and the options are “docu-

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<sup>69</sup> *Ibid.*

<sup>70</sup> The text segments are respectively from *Trimac Transportation Services - Bulk Systems v. Transportation Communications Union*, (1999) 88 L.A.C. (4th) 237, [1999] C.L.A.D. No. 750 [*Trimac Transport*]; *Fording Coal Ltd. v. United Steelworkers of America*, Local 7884, [2002] B.C.C.A.A.A. No. 9; *Halifax Employers Assn. v. International Longshoremen's Assn., Local 269 (Halifax Longshoremen's Assn.)*, 2003 NSSC 234, [2003] N.S.J. No. 439.

ment”, “paragraph” and “sentence”.<sup>71</sup> Though my objective was to identify documents (that is, individual decisions) containing references to the U.S. norms, I set the search unit to “paragraph”. The reason for choosing text segments of paragraph length rather than document length is to generate a KWIC list. This cannot be done if the query returns documents, since the returned segments are as long as the document itself and there would thus be no opportunity for verification and refinement of the key words as a function of the norm for which I wanted to code.

On the other end of the scale, sentence-level data risks being too fine-grained. A KWIC list containing only single sentences may not provide sufficient linguistic context to determine whether a given fragment is a genuine code candidate or not. Though such data might be useful for very short documents,<sup>72</sup> there is no obvious advantage in the context of the legal texts that comprise my population.

### 2.1.3. *Results: Prevalence of Infection in the Study Population*

After running the keyword retrieval function and verifying the results using KWIC tables, the decisions were coded. A numeric variable was then created for each code, representing the number of corresponding segments in each decision.

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<sup>71</sup> *QDA Miner Guide*, *supra* note 67 at 112.

<sup>72</sup> “Help wanted” ads, for instance. See *e.g.*, M. Sodhi and B. Son, “What Industry Employers Want from OR/MS Graduates” (2005) 32:4 *OR/MS Today* 32 (Using QDA Miner to return sentence-length KWIC lists).

These variables were then computed using QDA Miner.<sup>73</sup> Thus, for each member of the population, the numeric variable FOR\_CAUSE contains an integer equal to the number of times the code FOR\_CAUSE is found in the decision, and so on, for each of the three infection codes. A query was then run on the entire population for each of these codes, retrieving all decisions in which the corresponding numeric variable was >0. The results were as follows:

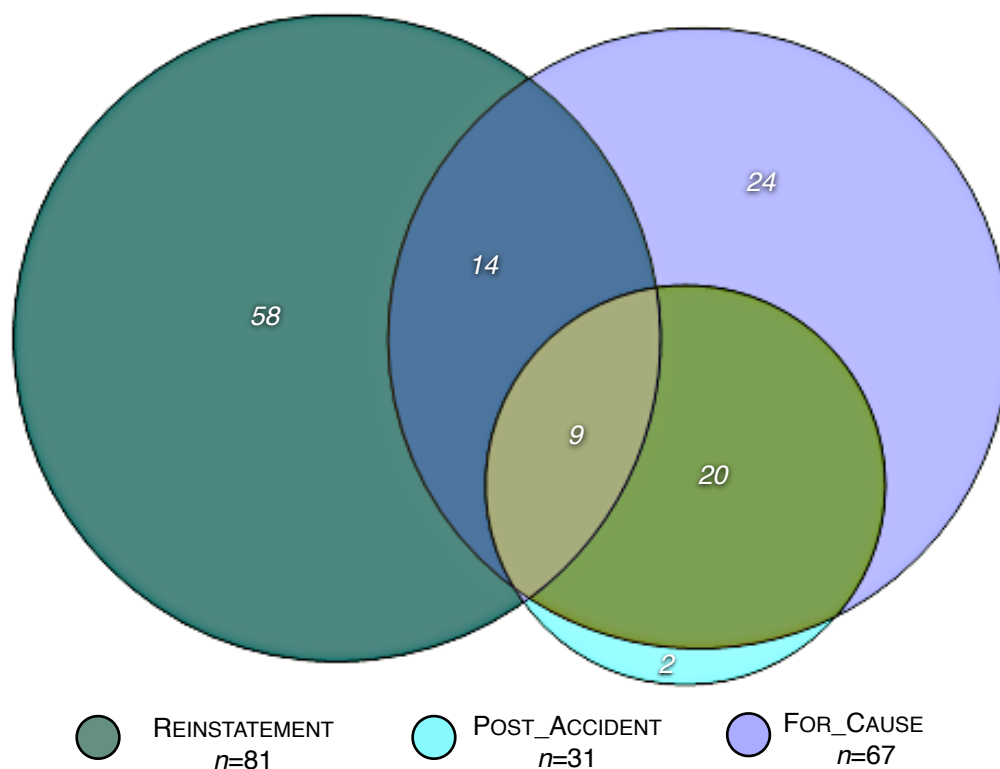
*Table V-III: Code Frequencies (Number of Documents)*

Code representing infection	Decisions containing code
FOR_CAUSE	67
POST_ACCIDENT	31
REINSTATEMENT	81
<b>Total</b>	<b>179</b>

The sum of the coded decisions appears to give a total infection rate of 95.72%. This is misleading, however, since many decisions contain codes from more than one category. A query designed to identify any decision containing at least one of the infection codes,<sup>74</sup> returned 127 unique decisions, giving an infection prevalence of 67.91%. Further queries revealed the pattern illustrated in Figure 5-4.

<sup>73</sup> A detailed explanation of this function is in *QDA Guide, supra* note 67 at 178 (“Storing Code Statistics in Numeric Variables”).

<sup>74</sup> That is, a boolean query expressing FOR\_CAUSE>0 OR POST\_ACCIDENT>0 OR REINSTATEMENT>0.



*Fig 5-4. Venn diagram of infected decisions by norm*

As we can see, there are only nine decisions that contain expressions of or references to all three U.S. norms and a total of 34 that contain two. The majority of the infected decisions (84 or 66.14%) are only coded for a single norm.

### 3. Conclusions

We now have a good overview of our population. Some of its attributes – notably the overrepresentation of federal and transportation decisions at the beginning of the study period and the striking number of decisions rendered by Arbitrator Picher relative to the mean – provide clues of where to look for infection and spread. We also have a quantified concept of infection that can be related to the other properties of individual members of the population. We thus have many of

the tools in hand that we need to test the various transmission hypotheses. Such measurement of the spread of the drug testing norms, first indirectly using epidemic curve analysis, then directly using outbreak investigation techniques, is the subject of the next chapter.



## CHAPTER 6

### APPLYING THE MODEL (II): PROPAGATION

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## Introduction

In Chapter 5, I operationalized the concepts of population and infection and presented a picture of my study population. This presentation of the population and the number of infectives was static in that it did not show variation over time. To fully account for the concept of contagion that is the basis of the epidemiological model, however, we must analyze the *spread* of the infectious condition, that is, the movement over time of members from the susceptible to the infective set. That is the subject of this chapter.

In the first section, I attempt to measure spread *indirectly*. This is a standard approach in epidemiology. By measuring variations in prevalence over time we can learn about the dynamics of an epidemic as a whole. It also allows us to crystallize our intuitions and refine hypotheses about the mode of transmission. In turn, these hypotheses can be verified in outbreak investigations. The results set out are consistent with a propagating epidemic, which may be indicative of a common reservoir epidemic or a serial transfer epidemic, or both.

The second section comprises an outbreak investigation, in which I measure spread *directly*. The data confirms the hypothesis that the propagation of U.S. drug testing norms started as a common reservoir epidemic and then spread across the population by serial transfer. I also show evidence implicating Arbitrator Michel G. Picher as a vector of transmission for the U.S. norms.

In the third and final section I look at two circumstances where propagation is *not* observed. The first is where members of the population have come into

contact with the source of the norms, but failed to become infected. I call this resistance. The second is where members of the population have become infected without any apparent contact with the source of the norms. I call this an alternate strain.

## **1. Measuring Transmission Indirectly**

Recall that the standard way to illustrate infection over time is by tracing an epidemic curve; a histogram showing the development of new cases over time. So called “epicurve analysis” is a way to indirectly measure transmission. The shape of the curve may either generate hypotheses about mode of transmission or serve as evidence tending to support or falsify such a hypothesis. As I explain in this section, the epicurve of the studied population is consistent with a propagating epidemic, though these results must be nuanced by taking into account particular features of the chosen population units.

### *1.1. Tracing an Epidemic Curve*

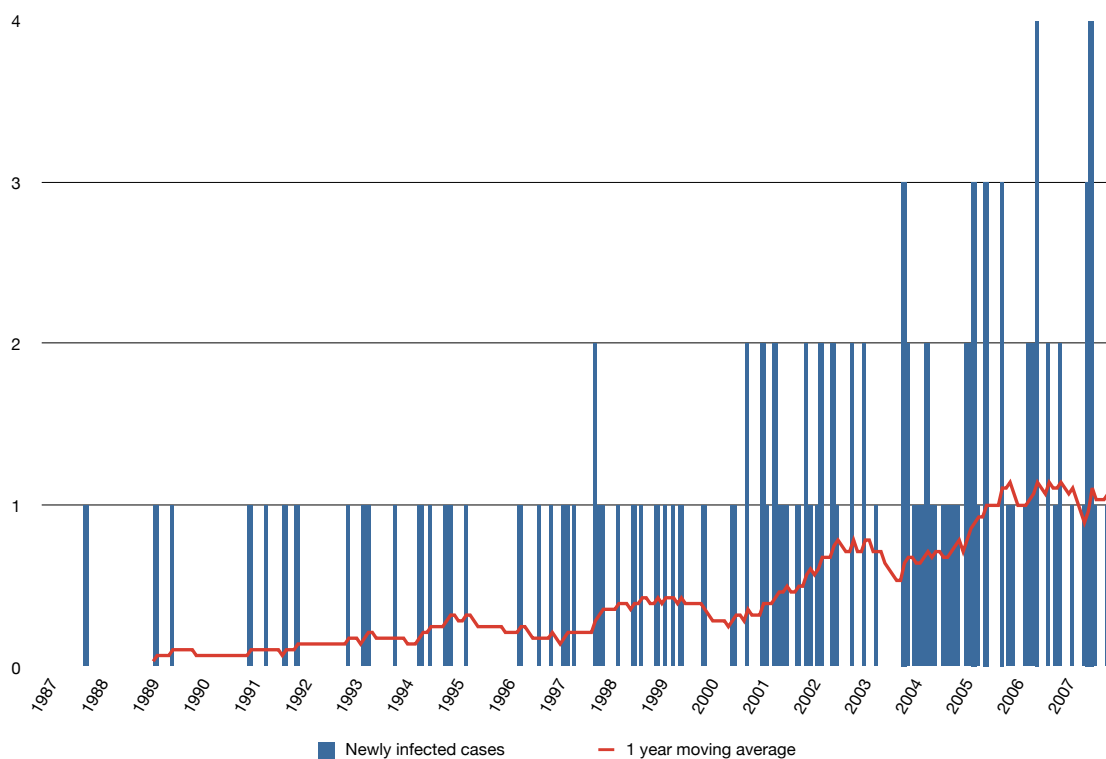
As I mentioned in Chapter 3, the time intervals along the X-axis of the histogram have an impact on the shape of the curve and the Centres for Disease Control and Prevention suggest using a time interval of between one-eighth and one-third of the mean incubation period.<sup>1</sup> The incubation period for the members of my population is the time between the last day of hearings and the date the decision was rendered.<sup>2</sup> The average incubation period for the decisions in my population

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<sup>1</sup> See s. 3.6.1 of Chapter 3.

<sup>2</sup> See s. 2.2.4 of Chapter 4.

for which the relevant data is available<sup>3</sup> is approximately three months.<sup>4</sup> I thus initially chose a time interval of two weeks for my epidemic curve, which falls within recommended range.<sup>5</sup> The resulting histogram is illustrated in Figure 6-1.



*Fig. 6-1. Epidemic curve of infection by U.S. drug testing norms (biweekly)*

Though the tendency is not conclusive, the histogram shows a general upwards trend. No interval period prior to 1998 presents more than a single case. From mid-2000 onwards, this becomes a regular occurrence and from 2004 onwards we begin to see interval periods with three and even four cases. In addition to the in-

<sup>3</sup> Hearing dates are available for 79.68% of the decisions ( $n=149$ ).

<sup>4</sup> 89.2 days.

<sup>5</sup> 14 days is 1/6.4 of 89.2.

creasing numbers of cases in each interval period, we can also see an increase in the density of time-periods containing new cases. In other words, as we move along the X-axis (forward in time) the number of time intervals presenting at least one case increases. The moving average (red line) illustrates this trend, showing a gradual increase. This suggests that – despite having based the time-interval on the average incubation period – the units on the X-axis are too small to represent this aspect of the curve, and they are distorting the results. This is confirmed when we trace the same data using years as the time-interval, as in Figure 6-2, where the upward trend is much more pronounced.

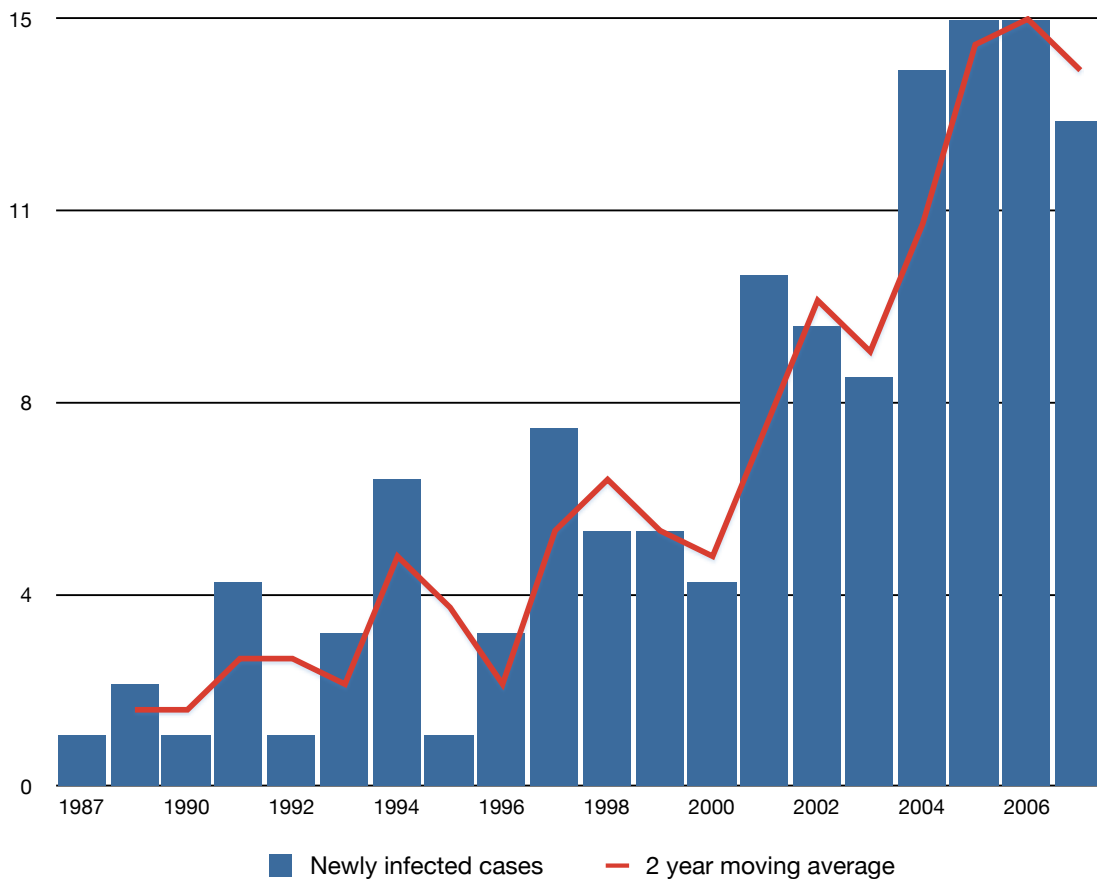


Fig 6-2. Epidemic curve of infection by U.S. drug testing norms (yearly)

An upward trend in an epidemic curve can be indicative of several scenarios. It may be consistent with either a sporadic or point epidemic in its initial phases, in which case we would expect the number of new cases to begin decreasing sometime in the next few time-intervals. Recall, however, that sporadic and point epidemics are isolated outbreaks generally associated with either random variations in incidence or specific triggering events.<sup>6</sup> This is not consistent with the data presented here, as the number of time intervals covered is very high.<sup>7</sup> Given the study period, the curve is more consistent with a propagating epidemic, which is associated with either continued exposure to a common reservoir or serial transfer. This lends plausibility to my working hypothesis that the drug testing norms were drawn from a common reservoir of American sources and then transmitted across the Canadian jurisprudence.

### 1.2. *Limits of Epicurve Analysis of the Studied Population*

This tentative confirmation of my working hypothesis by the shape of the epidemic curve requires a number of clarifications that render it less robust. First, there is no way to determine, simply from looking at the histogram, which of the infections are *ex hypothesi* the result of exposure to the common reservoir and which were caused by contact with an infective. Since the curve of a propagating epidemic may be consistent with both common reservoir and serial transfer modes of transmission, the curve itself cannot be used to be distinguished between the two.

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<sup>6</sup> See text accompanying note 92 in Chapter 3.

<sup>7</sup> Based on approximately one-sixth of the 14 day incubation period ( $n=273$ ).

Testing both the common reservoir and serial transfer scenarios is the subject of Section 3.2 below.

The second clarification that undermines the robustness of any conclusions drawn from the shape of the curve is the nature of the population itself. As I discussed above, the number of new decisions rendered every year increases steadily over the period studied.<sup>8</sup> Furthermore, since a decision is only susceptible during the year it was rendered,<sup>9</sup> the size of the susceptible population varies directly with the increase in the number of new decisions. When we look at the rate of new decisions rendered it, the shape of the resulting histogram appears to match that of the epidemic curve. The most likely conclusion to draw from this is that the shape of the epidemic curve is not wholly a consequence of the mode of transmission but at least partially a reflection of a change in the size of the susceptible population.

As I suggested in the previous chapter,<sup>10</sup> one way to palliate this is to control for the variation in the number of susceptible in order to get a clearer picture of the underlying dynamics of the epidemic. The clearest way to control for such variation is to track cumulative incidence,<sup>11</sup> which is a measure of the risk that any

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<sup>8</sup> See Figure 5-2 (Total and Susceptible Population Sizes Over Time) in Chapter 5.

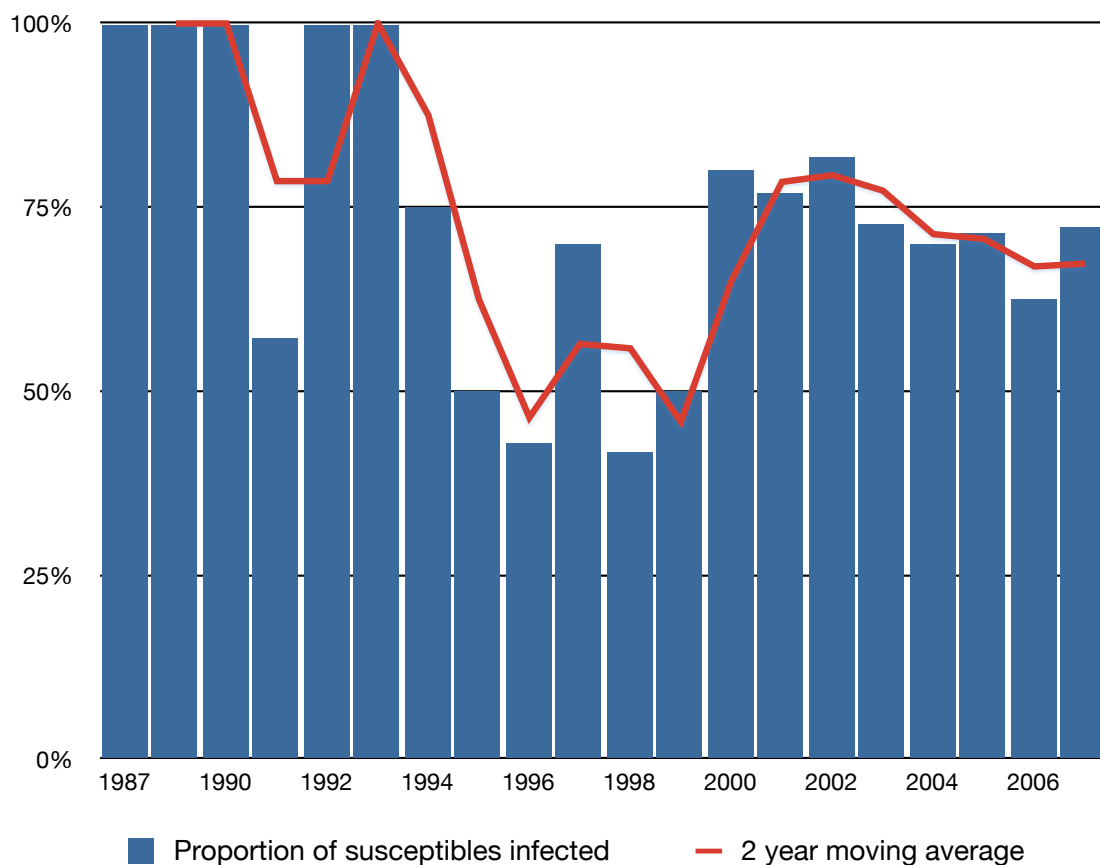
<sup>9</sup> More precisely; for the period running from the first day of trial until the decision is rendered. See Figure 4-2 (Epidemiological epochs of legal decisions) in Chapter 4.

<sup>10</sup> See text accompanying note 51 of Chapter 5.

<sup>11</sup> Note that in my population the “cumulative” incidence rate is not cumulative at all, since no member of the population is susceptible for more than one time interval.



given susceptible will become an infective during a given period of time.<sup>12</sup> The cumulative incidence for the study population is illustrated in Figure 6-3.



*Fig. 6-3. Cumulative incidence rate*

This histogram shows the risk, in any given time-period that susceptible member of the population will be infected. In terms of the study population, this can be expressed as the probability that a decision rendered will be infected with one of

<sup>12</sup> This is sometimes called “attack rate” in the case of food-borne outbreaks. A time period of exactly one unit is generally implicit in the use of the notion of attack rate, since all of the cases in most food-borne outbreaks appear within hours or days. Technically then, the “attack rate” is a *proportion* and not a *rate*. See Leon Gordis, *Epidemiology*, 4<sup>th</sup> ed. (Saunders Elsevier: Philadelphia, 2009) at 39-42.

the U.S. norms. Evidently, this graph gives a different picture from the epidemic curve, whereas, *ceteris paribus*, the two curves should have the same shape.<sup>13</sup>

On the other hand, if the upward trend in the epidemic curve was entirely due to the corresponding increase in the number of susceptibles, then we would expect the cumulative incidence rate to be constant.<sup>14</sup> Unfortunately, the low number of cases just doesn't allow us to determine whether the variation in cumulative incidence is due to a genuine change in the epidemic. For instance, there was only one decision rendered in each of 1987, 1990, 1992 and 1995 and these four decisions happened to be infected, giving an incidence of 100% for each of those years. This gives the same results on the graph as if there had been twenty decisions rendered and all twenty were infected. Whereas the latter case would indicate propagation, it is not possible to deduce this from the former case. The numbers are simply too small.<sup>15</sup>

Having generated a curve that – at the very least – appears to be consistent with a propagating epidemic, but being unable to confirm this using the change in incidence rates, the best strategy is to attempt to further confirm or falsify the propagation hypothesis by direct measurement of transmission.

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<sup>13</sup> This is because – in a stable population with homogeneous mixing – the risk of being infected varies with the number of infectives in the population.

<sup>14</sup> The graph would then be flat at 65.8%, which is the prevalence of infection.

<sup>15</sup> These features make tracing curves for any of the subsets of the population superfluous. Clearly if the numbers are too small to provide solid ground from which to draw conclusions for the entire population, the problem will be exacerbated in the case of subsets of the population, which are even smaller by definition.

## 2. Measuring Transmission Directly

Although the indirect measurement of spread by epicurve analysis was not conclusive, it did lend some support to the hypothesis that the spread of the U.S. norms through the Canadian jurisprudence during the study period was a kind of propagating epidemic. This is consistent with both the common reservoir and serial-transfer modes of transmission, each of which can occur through direct contact or through vectors.

In this section, I measure spread directly in order to further test these hypotheses. The results show that contact with the reservoir is strongly correlated with infection status. Contact with infected members of the population by members who did not have contact with the reservoir is also correlated with infection status, which shows that serial transfer occurs. Furthermore, the number of serial transfer infectives, proportionate to common reservoir infectives, increases over time. This is consistent with the claim that the U.S. norms were first transmitted directly and then spread across the Canadian jurisprudence.

### 2.1. *Outbreak Investigation Using References and Citation Patterns*

As I explained in Chapter 4,<sup>16</sup> the most promising evidence of effective contact (*i.e.* the kind of contact that would result in transmission) is citation and reference. Thus, *ceteris paribus*, when faced with an infective decision that cites a source of infection, we can deduce that the infection was transmitted from the cited source to the decision. Citation to an American source would indicate direct contact with

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<sup>16</sup> See s. 2.2.2.1 of Chapter 4.

the reservoir of U.S. norms. Citation to an infected member of the population (*i.e.* another decision rendered by a Canadian tribunal) would indicate a case of serial transfer.

Measuring citations turned out to be somewhat harder than I first believed. My initial intention was to use the citation and cross-referencing systems of the legal databases that served to generate my dataset in order to identify patterns of citation between them.<sup>17</sup> Legal citation indexes have grown from their humble origins as part of the tables of contents of eighteenth century case reporters into quite powerful and complex tools.<sup>18</sup> However, despite their sophistication, the tools available proved to be insufficiently reliable for my particular purposes. This is because the built-in case citator in Quicklaw (called “Quickcite”) does not contain administrative tribunal decisions unless they have been judicially considered by a court.<sup>19</sup> Since the overwhelming majority of the members of the studied

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<sup>17</sup> The citator tool in Quicklaw is called Quickcite. The tool in *Azimuth* is called *Le citeur*. Though they differ somewhat in implementation, they both allow one to track future citations of a case as well as list the cases that it cites.

<sup>18</sup> Fred. R. Shapiro, “Origins of Bibliometrics, Citation Indexing, and Citation Analysis: The Neglected Legal Literature” (1992) *Journal of the American Society for Information Science* 337.

<sup>19</sup> The Quicklaw help file at <http://www.lexisnexis.com> makes the promising claim that the Quickcite database contains the “more than 380,000 board and tribunal decisions reported on Quicklaw,” only to qualify it with “[these] decisions are cited only when judicially considered by a court.”

population were rendered by administrative tribunals,<sup>20</sup> it is impossible to get a useful picture of its citation networks using Quickcite.<sup>21</sup>

Another way of measuring citation networks would be to use the QDA Miner keyword retrieval function to seek references to individual decisions within the decisions that are included in the population. The results could then be coded and the codes could be analyzed to establish any citation patterns. Again, however, I found myself confronted by the limits of the data and of the tools I have to analyse it. A few test queries rapidly revealed that citation practices are so varied and of such uneven quality that producing a single reliable query is impossible. This is particularly evident with arbitration decisions, since there is no institutional infrastructure that could apply a stable set of citation practices.<sup>22</sup> Though I managed to construct a patchwork of queries that allowed me to test for the citation to American sources and to one set of Canadian decisions,<sup>23</sup> I ultimately abandoned this approach.

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<sup>20</sup> 88.78% ( $n=166$ ).

<sup>21</sup> Whether a decision rendered by an administrative tribunal has been reviewed by a court may have *some* role to play in determining its place in a citation network. For instance, one would expect that an arbitration decision that was subject to judicial review (and *a fortiori* at the level of a court of appeal) would be more likely to be cited than a decision that had not been. However, it does not follow that decisions that have not been judicially considered by a court are not relevant, or even crucial, to understanding the network of citations that allows a legal norm to spread.

<sup>22</sup> One can contrast single arbitrator who writes his or her own decisions to the Supreme Court of Canada, which has an extremely uniform and predictable citation style that is known by the judges and their clerks and enforced by the editors of the Supreme Court Reports. The relative inconsistency of citation practices in administrative tribunals is also no doubt one of the reasons they are not fully indexed by Quickcite.

<sup>23</sup> Those decisions rendered by Arbitrator Picher. See s. 2.4.1, below.

For the remainder of the citation networks that I wanted to explore, the chosen measurement methodology was reading the decisions and then manually entering the citation data in QDA Miner. Thus, when I wanted to quantify the citation relationships between two sets of decisions, I set up a table with the potentially cited decisions as rows and the potentially citing decisions as columns. Each decision was then read and a check-mark was put in the cell representing the intersection between a cited decision and a citing decision. Cells containing a check-mark thus indicated citation and empty cells indicated the absence of citation. Once complete, the data from each of these spreadsheets was compiled and then manually re-entered into QDA Miner so that it could be correlated with other properties of the decisions, notably infection status.

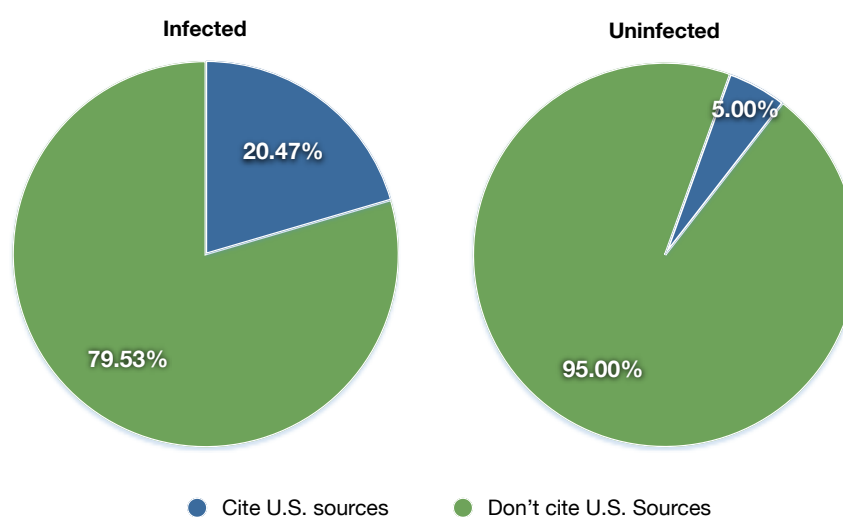
### *2.1.1. Measuring Contact With the Reservoir*

One way to interrogate the claim that the Canadian jurisprudence was infected by the U.S. norms is to correlate infection status with direct reference to the United States. A positive correlation is evidence supporting the common reservoir hypothesis. To measure this, I constructed a code representing citation to or quotation from American sources.<sup>24</sup> To effect this, I used a keyword query and then, using a KWIC list, hand-coded each returned segment that was an actual quote or citation. These segments could then be automatically correlated with the codes for infection status.

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<sup>24</sup> Appendix 3: Variables, Data Types and Codes. Note that the American sources are not necessarily formal state law instruments. I have included reference to American policies, academic commentary, expert testimony by human resources consultants describing the U.S. experience, *etc.*

There were 26 infected decisions that cited American sources. Thus over one-fifth of all infected decisions cite American sources,<sup>25</sup> whereas only one-twentieth of uninfected decisions do.<sup>26</sup> In other words, infected decisions were over three times more likely to cite American sources than uninfected ones. This data, illustrated in Figure 6-4, supports the claim that direct citation of American sources was a source of infection.



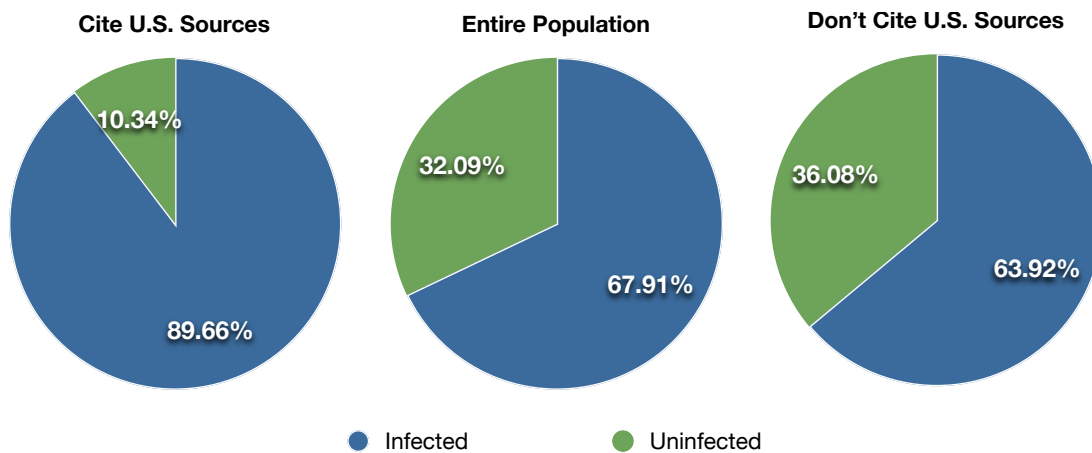
*Fig. 6-4. Citation rate (U.S.) by infection status*

The data are very clear when we compare prevalence between those decisions that cite American sources and those that don't. There were a total of 29 decisions that cite American sources and thus the prevalence of infection in the citing population is 89.66%. This is 21.75 percentage points higher than the general population and 25.74 points higher than the population of decisions that don't cite

<sup>25</sup> 26 out of the 127 infectives or 20.47% cited American sources.

<sup>26</sup> 3 out of the 60 uninfected decisions or 5.00% cited American sources.

American sources. This data, illustrated in Figure 6-5, further supports the relationship between citing American sources and infection with the U.S. norms.



*Fig. 6-5. Infection status by citation (U.S.)*

It is important to distinguish between these two measures and understand how they each contribute to confirming the transmission hypothesis. In the first case, we are measuring the likelihood of transmission based on infection. This is like asking “how many people who got Salmonella ate at the picnic where the egg salad was served?” In the second case, we are measuring the likelihood of infection based on opportunity for transmission. This is like asking “how many people who were at the picnic where the egg salad was served got Salmonella?” In each of these two cases, a positive correlation indicates that the egg salad may have contributed to the Salmonella outbreak. If both indicators are positive, the evidence implicating the egg salad is strong.

It might appear rather obvious that decisions that cite American sources should mention the U.S. norms. We must remember, however, that the way I de-



scribed the norms for the purposes of determining infection status is not dependent on their origins. I have been claiming that norms of type  $X$ ,  $\mathcal{Y}$ , and  $\mathcal{Z}$  appear first in the United States and thereafter in Canada. The fact that Canadian decisions that cite American sources are very likely to refer to such norms is evidence that we are faced with a phenomenon of transmission, rather than just development of similar rules to govern similar situations.

Having established a positive correlation between infection and direct citation to American sources, the common reservoir hypothesis is provisionally confirmed. Further analysis is necessary, however. The intuition behind the viral metaphor set out in Chapter 1 was that after contact between the Canadian jurisprudence and the U.S. norms, the latter continued to spread to members of the population who were not themselves exposed to the reservoir.

## 2.2. *Measuring Subsequent Propagation*

If, as I predicted, the U.S. norms spread from the initially infected members of the population to other members through a process of serial transfer, then – according to the model – the evidence for such spread would be a positive correlation between infection status and citation to a decision that itself cites an American source.<sup>27</sup> The data exhibit a positive correlation and thus confirm the spread hypothesis. What’s more, there is also a positive correlation between infection status and citation to this second set of decisions, which provides further confirmation.

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<sup>27</sup> This process of measuring “citation distance” is the same process as that by which mathematicians can be assigned an Erdős number. See Casper Goffman, “And What Is Your Erdős Number?” (1969) 76(7) *American Mathematical Monthly* 79.

To measure the correlation, I started with a subset of the population composed of the 26 infected decisions that cite U.S. norms directly. I excluded the 3 uninfected decisions that cite U.S. norms for the obvious reason that citation to those decisions could not be indicative of spread. For ease of exposition, let's call this sub-population of infected American-citers "US<sub>(1)</sub>". I then examined the remaining decisions.<sup>28</sup> If one of these decisions cited a member of US<sub>(1)</sub>, then it was flagged as being a member of a second set of decisions, which I call "US<sub>(2)</sub>". There turned out to be 40 decisions in US<sub>(2)</sub> – that is, decisions that do not themselves cite an American source but that cite an infected decision that in turn cites an American source. I created a variable in QDA Miner to represent membership in US<sub>(2)</sub> and entered the corresponding data.

In the software, infection status was then correlated with membership in US<sub>(2)</sub>: of the 40 decisions, 35 were infected. The prevalence of infection of that sub-population was thus 87.50%, which is slightly lower than the rate for US<sub>(1)</sub>, but still well above the rate of the general population. Furthermore, when we look at the decisions that neither cite U.S. sources directly (US<sub>(1)</sub>) nor indirectly (US<sub>(2)</sub>) the prevalence of infection in the remaining decisions drops to 53.38% – a difference of over one-third.<sup>29</sup> Since, by definition, the only difference between the members of US<sub>(2)</sub> and these remaining decisions is that the members of US<sub>(2)</sub> cite infected decisions that cite American sources, it follows that the fact of citation is

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<sup>28</sup>  $n = 158$  (187 minus the 29 that cite American sources).

<sup>29</sup> The remaining population has 118 members (187-29-40) of which 63 are infected.

the explanation for the difference in infection rates between the two groups. In other words, the reason that there is a difference in infection rates between the members of  $US_{(2)}$  and these remaining decision is that the U.S. norms were *transmitted* from the members of  $US_{(1)}$  to the members of  $US_{(2)}$ . This is strong evidence in favour of the serial transfer hypothesis.

The results of iterating this measurement of citations lends even more support to the serial transfer hypothesis. Turning my attention to the remaining population, I once again counted the number of citations to infected decisions that are members of  $US_{(2)}$ . The resulting sub-population – “ $US_{(3)}$ ” – is thus comprised of decision that cite infected decisions, which in turn cite infected decisions that cite American sources. This small population<sup>30</sup> comprised 9 members, of which 8 (88.89%) were infected. Once again, the prevalence is well above the general population.<sup>31</sup>

When we combine all of the decisions that can be traced directly or indirectly to American sources, the prevalence of infection is 88.46%,<sup>32</sup> compared to

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<sup>30</sup> Given the branching nature of serial transfer, one would expect each successive generation to have more members than the previous one. It might therefore seem surprising that  $US_{(3)}$  has so few members. There are two explanations for this. First, it takes a while for such removed citation networks to emerge. The first member of  $US_{(3)}$  appears in 2001, a mere 6 years before the study end-date. Second, given the foundationalist reflex embodied in the rule of *stare decisis*, adjudicators tend to cite the first in a line of cases, even when it has been confirmed repeatedly in more recent cases. Since I have constructed the generations such that no decision can be a member of more than one generation, the number of decisions is bound to slope off. (This is tantamount to presuming that infection passed from the closest member to have been in contact with the source. For example, if Alice were infected with *mononucleosis* and Bernard and Charley both kissed Alice and each other, then my model *presumes* that Bernard and Charley were infected by Alice and not by each other).

<sup>31</sup> Given the small sub-population size, however, this data must be viewed as less robust than in the previous generation. If only two fewer decisions in  $US_{(3)}$  had been infected, the prevalence for that group would have been in the same range as the general population.

<sup>32</sup>  $n=69$  (out of a population of 78).

53.21% for the remaining 109 decisions (*i.e.* those that are neither members of  $US_{(1)}$ ,  $US_{(2)}$ , nor  $US_{(3)}$ ).<sup>33</sup>

Clearly, traceability to an American source is a determiner of infection status. Furthermore, these three sets of decisions show that (1) direct contact with the reservoir of U.S. norms is a source of infection and (2) infection spread across the jurisprudence serially for much of the population that was not in direct contact with the reservoir. In the following subsection, I will present the data related to the trends of these two phenomena over time.

### *2.3. Complex Transmission and the Relationship Between Infection Routes*

The initial narrative that I used to describe the development of the employment drug testing caselaw in Canada was that *first* there was contact with the American norms and *then* there was subsequent spread across the jurisprudence. Call this “the temporal hypothesis”. In the more precise terminology of the epidemiological model, the hypothesis was refined to state that the transmission of the drug testing norms began as a common reservoir epidemic and then continued as a serial transfer epidemic.

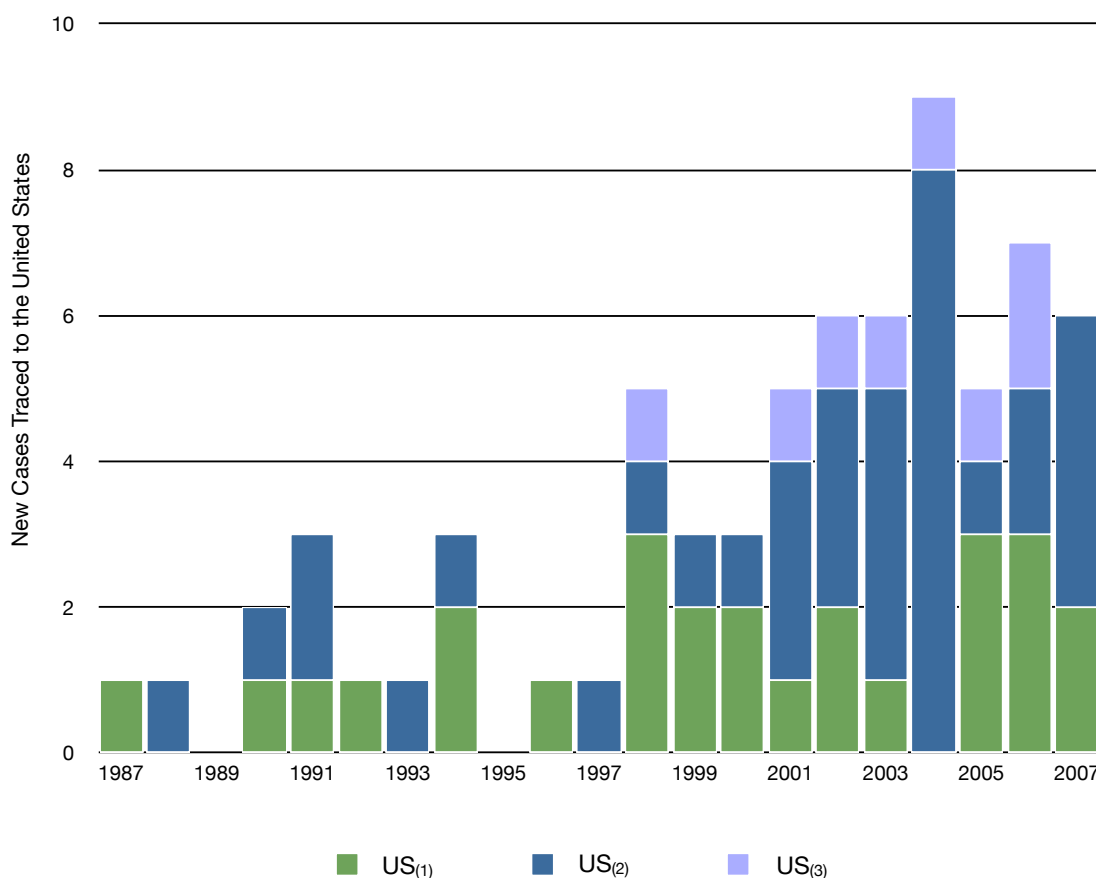
In part, the aggregate citation data supports this temporal hypothesis in itself. Since a decision can only be cited after it is rendered, it stands to reason that the second and third generation decisions that confirm the serial transfer hypothesis (*i.e.* the members of  $US_{(2)}$  and  $US_{(3)}$ ) came after the first set of decisions that confirm the common reservoir hypothesis ( $US_{(1)}$ ). This supports the temporal hypothesis only in part though, since contact between the Canadian jurisprudence

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<sup>33</sup>  $n=58$  (out of a population of 109).

and the common reservoir continued throughout the study period.<sup>34</sup> The dynamics of the epidemic are thus analogous to a cholera outbreak that started with a contaminated well and then began to spread across the population, but where the well was still occasionally used.<sup>35</sup>

Better confirmation of the temporal hypothesis is found in the increasing proportion of decisions in US<sub>(2)</sub> and US<sub>(3)</sub> relative to the number of decisions in US<sub>(1)</sub> during the same time period. This is illustrated in Figure 6-6:

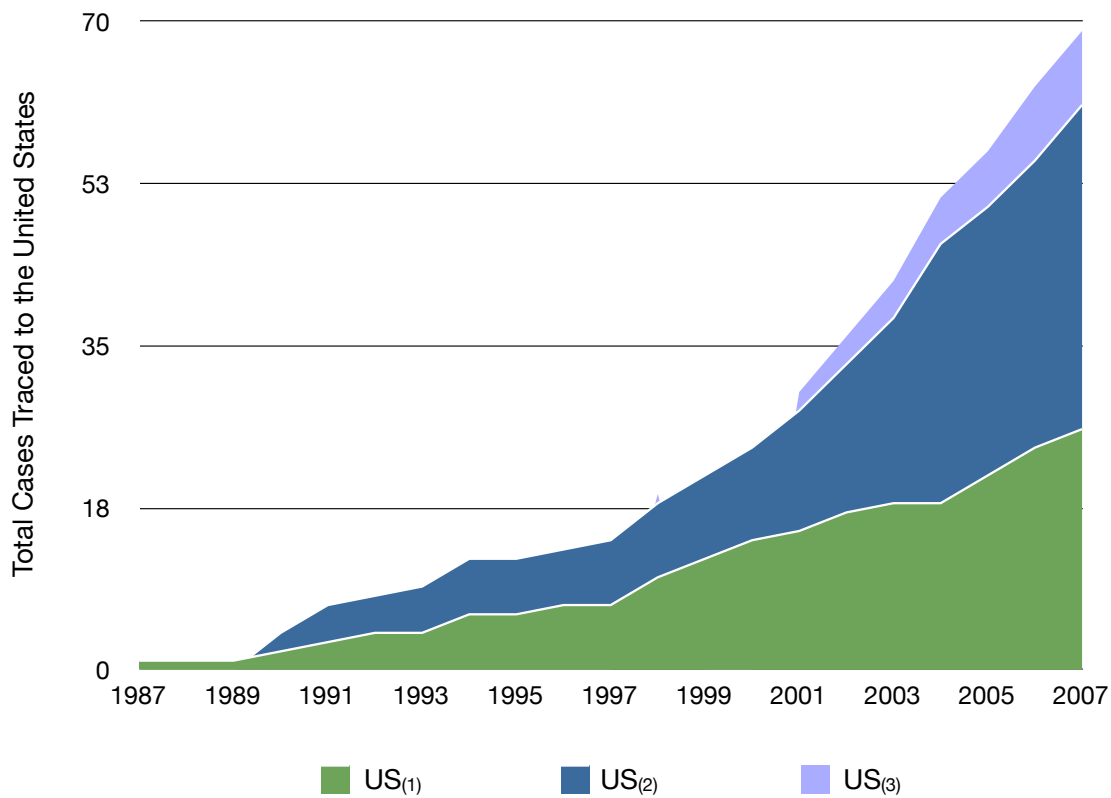


*Fig. 6-6. Infection route of new cases over time*

<sup>34</sup> In fact, there were many *more* decisions in US<sub>(1)</sub> rendered in the period from 1998 to 2007 ( $n=19$ ) than in the period 1987-1997 ( $n=7$ ).

<sup>35</sup> On common reservoir and serial transfer modes of transmission of cholera, see ss. 3.3.2 and 3.3.4 of Chapter 3.

In this figure, the increasing demographic importance of decisions infected by serial transfer (blue and violet) as compared to those infected by direct contact with the reservoir (green) is clear despite the persistence of the reservoir infection route. The same trend is even more striking when we look at the relative numbers on a cumulative basis, as in Figure 6-7.



*Fig. 6-7. Relative demographic importance of different infection routes*

Here we can see that the total number of decisions infected by serial transfer eventually caught up with the number of cases infected by direct contact with the reservoir in 2002. Thereafter, the proportion of reservoir-based infections decreases relative to the serial transfer cases, despite a continued increase in absolute terms.

The temporal hypothesis is thus confirmed by the data. The transmission of the U.S. norms was initially a kind of common reservoir epidemic where citation to American sources was the primary source of infection. The norms began to propagate serially as a body of Canadian jurisprudence emerged and was cited to. As time went on, more and more of the newly infected decisions were the result of serial transfer from other Canadian cases. In colloquial terms, the U.S. norms “went viral”.

#### 2.4. *Investigating a Point of Contact: The Transportation Industry*

Another element in the intuitive description of the epidemic described in Chapter 1 is the important role of the transportation industry – railroads in particular – which appeared to act as a point of contact allowing the U.S. norms to enter the Canadian jurisprudence. The data confirms this.

To test the hypothesis that the transportation industry acted as a point of infection, I tracked the distribution of decisions by industry within the various subsets of infected decisions known to be traceable to American sources. The distribution roughly tracked that of the general population, with one important exception. In  $US_{(1)}$  almost half of the infected members were decisions from the transportation industry,<sup>36</sup> a proportion that is more than triple its demographic weight in the remaining infected decisions.<sup>37</sup> Conversely, the infectives in almost every other industry are more likely to have been infected by serial transfer than direct

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<sup>36</sup> 46.15% ( $n=12$ ).

<sup>37</sup> 13.86% ( $n=14$  out of the 101 infected decisions that do not cite American sources).

citation to American sources.<sup>38</sup> In other words, decisions that directly cite U.S. norms were much more likely to be from the transportation industry than from any other industry, whereas infected decisions from other industries were likely infected by serial transfer rather than contact with the common reservoir.

A more fine-grained analysis of the role of the transportation industry removes any doubt that it was an important point of infection and further transmission. The three most widely cited decisions in US<sub>(1)</sub> – which together are cited directly or indirectly by almost two-thirds of subsequently infected decisions – are all from the transportation industry.<sup>39</sup> Two of them are from the railroad industry and were rendered by Arbitrator Michel G. Picher; these two decisions were implicated in the subsequent infection of almost two-thirds of decisions that can be traced to American sources.<sup>40</sup>

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<sup>38</sup> The only exception is the Oil & Gas industry, which has a relatively high rate of infection by contact with the common reservoir ( $n=5$  or 19.23% of infected US<sub>(1)</sub> decisions) compared to infection by serial transfer ( $n=5$  or 11.63% of infected US<sub>(2)</sub> and US<sub>(3)</sub> decisions).

<sup>39</sup> Those decisions are *Canadian Pacific Ltd. v. U.T.U. (Hutchinson grievance)* (1987) 31 L.A.C. (3d) 179; [1988] C.L.A.D. No. 61, CROA Case No. 1703 (M.G. Picher) [*Hutchinson* cited to CROA], *Canadian National Railway Co. and National Automobile, Aerospace, Transportation and General Workers Union of Canada (CAW-Canada), (Re)* (2000) 95 L.A.C. (4th) 341, [2000] C.L.A.D. No. 465 [*CN & CAW*], and *Trimac Transportation Services - Bulk Systems v. Transportation Communications Union*, (1999) 88 L.A.C. (4th) 237, [1999] C.L.A.D. No. 750 [*Trimac Transport*]. *Hutchinson* is cited by 14 different decisions and each of the other two is cited by 12 different decisions, some of which cite two or all three, for a total number of 23 individual members of US<sub>(2)</sub>. One or another of those 23 decisions is in turn cited by one or another of 5 individual members of US<sub>(3)</sub>, giving a total of 28 distinct decisions out of the 43 that comprise the class of decisions infected by serial transfer (65.12%).

<sup>40</sup> *Hutchinson, ibid.* and *CN & CAW, ibid.* Together, these two decisions were cited by a total 20 individual members of US<sub>(2)</sub>. One or another of those decisions were in turn cited by one or another of 8 individual members of US<sub>(3)</sub>, giving a total of 28 distinct decisions out of the 43 that comprise the class of decisions infected by serial transfer. Together, they thus are implicated in 65.12% of infections traceable to American sources.



The impact of these decisions from the transportation industry is visible when we map the citation network through which infection propagated, as in Figure 6-8. In this map, the nodes are infected cases from the  $US_{(1)}$ ,  $US_{(2)}$  and  $US_{(3)}$  sub-populations and the black lines indicate citation. The impact of the three transport decisions can be seen in red.

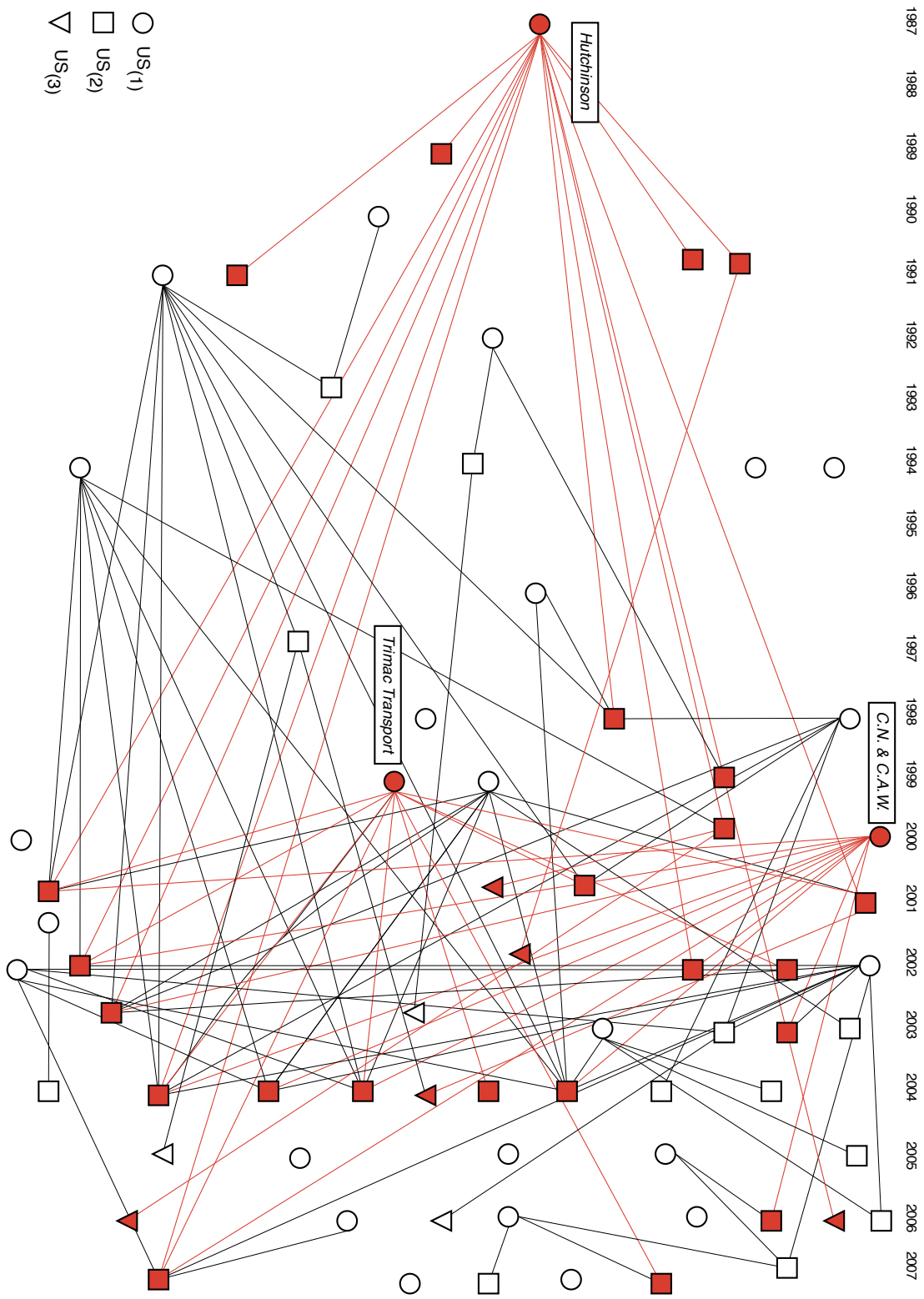


Fig 6-8. Citation map (impact of three most-cited decisions)

The map clearly shows that the transport industry decisions citing American sources acted as an important point of initial infection, after which they were widely cited by members of the US<sub>(2)</sub> and US<sub>(3)</sub> sub-populations. The impact of the two decisions rendered by Arbitrator Picher is also evident.

In profiling the population, I noted that Arbitrator Picher rendered a disproportionately large number of decisions in the population and that he rendered the very first infected decision. I hypothesized that one variable that might correlate to infection status is the tendency or not of a decision to cite one of Arbitrator Picher's decisions and thus that he acted as an important vector and secondary host for the U.S. norms. The data on spread set out here – and illustrated in the citation map – supports these hypotheses. In the next subsection, I test them directly.

#### 2.4.1. *Testing a Vector: Arbitrator Picher*

In Chapter 1, I hypothesized that the railroad industry played an integral role in the transmission of drug testing norms from the United States to Canada. I described how the Canadian Office of Railway Arbitration & Dispute Resolution (the CROA) rendered the first decisions applying the American norms in Canada. All of the CROA decisions cited were rendered by the Arbitrator Michel G. Picher, who has been the permanent arbitrator at that tribunal since 1987.<sup>41</sup> Arbitrator Picher also rendered the *Imperial Oil* decision that purports to exhaustively

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<sup>41</sup> Dennis W. Coughlin, “By Land and by Air: Two Models of Expedited Grievance Resolution” in Joyce M. Najita, ed., *Arbitration 1997 the Next Fifty Years: Proceedings of the Fiftieth Annual Meeting: National Academy of Arbitrators, Chicago, 1997* (Edison, NJ: BNA Books, 1999) 110 at 119.

set out the “Canadian model” on drug testing.<sup>42</sup> Furthermore, as I set out above, decisions by Arbitrator Picher are disproportionately represented in the population. For all of these reasons, I chose to track the impact of Arbitrator Picher’s decisions through their subsequent citation.

A first analysis of the decisions rendered by Arbitrator Picher himself (“Picher<sub>(1)</sub> decisions”) revealed an infection prevalence of 100%. Of the 11 infected decisions, 5 are members of US<sub>(1)</sub> and one is a member of US<sub>(2)</sub>. In other words, Arbitrator Picher cited American sources or sources that themselves cited American sources. Thus, there is a clear point of contact between our hypothesized vector and the reservoir of infectious norms. This quantitative description of the Picher<sub>(1)</sub> reflects the conclusions that I drew in Chapter 1, where I discussed the extent to which Arbitrator Picher relied heavily on American sources to justify the application of the U.S. norms.<sup>43</sup>

Using the same methodology as with the citation to American sources, I constructed a code representing citation to a decision rendered by Arbitrator Picher (*i.e.* citation to a Picher<sub>(1)</sub> decision).<sup>44</sup> As before, I used a keyword query and then, using a KWIC list, hand-coded each returned segment that was an actual quote or citation.

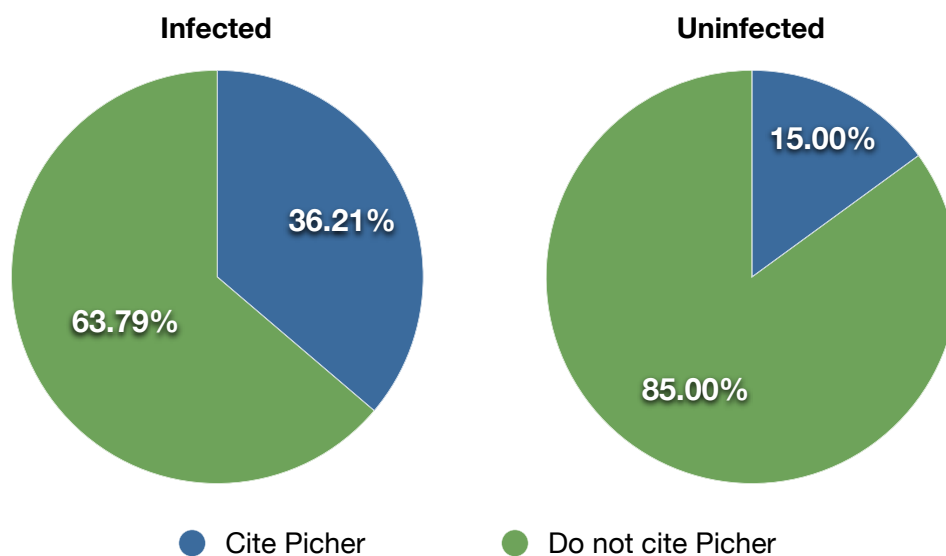
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<sup>42</sup> *Re Imperial Oil and C.E.P. Local 900*, (2006) 157 L.A.C. (4th) 225, 88 C.L.A.S. 273.

<sup>43</sup> See the discussion in s. 2.2.1.2 of Chapter 1.

<sup>44</sup> Appendix 3: Variables, Data Types and Codes.

The resulting population – “Picher<sub>(2)</sub>” – contained 42 infected decisions out of a total of 51. Thus, well over a third of the total infected cases in the study population cite a decision that was rendered by Arbitrator Picher,<sup>45</sup> whereas only 15% of uninfected decisions do.<sup>46</sup> In other words, infected decisions were over twice as likely to cite a decision rendered by Picher than uninfected ones. This data, illustrated in Figure 6-9, supports the claim that Picher served as a vector of infection for the U.S. norms.



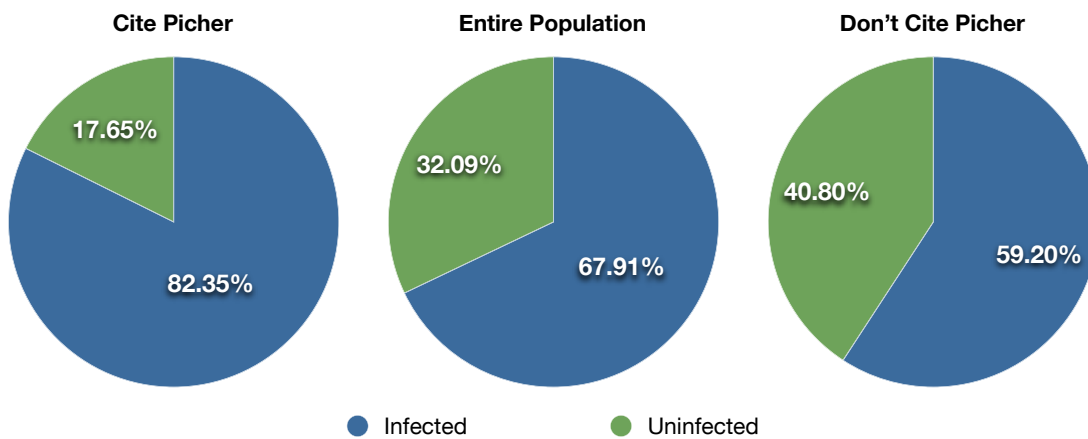
*Fig. 6-9. Citation rate (Picher) by infection status*

The data is even more striking when we compare prevalence between the decisions that cite Arbitrator Picher and those that don't. The prevalence of infection with the U.S. norms in the total Picher citing population is 82.35%. This is over

<sup>45</sup> 42 of the 116 infectives (127 minus the 11 rendered by Picher) equals 36.21%.

<sup>46</sup> 9 of the 60 uninfected decisions cite Picher (15.00%).

14 percentage points higher than the general population<sup>47</sup> and more than 23 percentage points higher than the population of decisions that were neither rendered by Picher nor cite a decision that was rendered by him.<sup>48</sup> This difference in prevalence between decisions that cite Picher and those that don't is represented in Figure 6-10.



*Fig. 6-10. Infection status by citation (Picher)*

Citation of a decision by Arbitrator Picher is thus almost as good a predictor of infection as reference to a decision that cites American sources.

The same is true of “second generation” decisions. Using the same manual system of citation tracking that I used to trace decisions that cite American sources, I constituted “Picher<sub>(3)</sub>”, which comprises 23 decisions that cite decisions that in turn cite decisions rendered by Arbitrator Picher. The prevalence of infec-

<sup>47</sup> The prevalence of infection of the entire population is 127/187 or 67.91%. The difference is thus 14.44 percentage points.

<sup>48</sup> The prevalence of infection of the population excluding decisions by Picher or that cite him is 74/125 or 59.20%. The difference is thus 23.15 percentage points.

tion for Picher<sub>(3)</sub> is 82.61%,<sup>49</sup> compared to 53.92% for the population that cannot be traced to a Picher decision.<sup>50</sup>

The higher prevalence of infection in the decisions rendered by Arbitrator Picher or traceable to him is evidence that he was an effective vector. We can say that he acted as a secondary host for the U.S. norms, transmitting them even to decisions he rendered that did not directly cite American sources.<sup>51</sup>

In assessing Arbitrator Picher's effectiveness as a vector, we must take into account that members of Picher<sub>(2)</sub> and Picher<sub>(3)</sub> may also be members of any of US<sub>(1)</sub>, US<sub>(2)</sub>, or US<sub>(3)</sub>. This is because decisions that cite decisions by Arbitrator Picher might also cite an American source, or some other source.<sup>52</sup> Decisions that cite a decision by Arbitrator Picher that is itself one of the five decisions by him that cite American sources are, by that citation alone, members both of Picher<sub>(2)</sub> and US<sub>(2)</sub>.<sup>53</sup> This raises the question of whether the mere fact of citing a member

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<sup>49</sup>  $n=19$ .

<sup>50</sup>  $n=55$  (out of a population of 102).

<sup>51</sup> Though one must be careful not to psychologize the adjudicative process, two characteristics of Arbitrator Picher may have some relation to this role of secondary host. First, he pursued his master's degree in law at Harvard University. This may have made him more comfortable accepting the reasoning set out in American sources of law. Second, he has long been involved in sports arbitration, both professional and amateur. As I mentioned in Chapter 1, athletes were among the very first populations subject to drug testing. This familiarity with a milieu in which drug testing was accepted may have made Arbitrator Picher more amenable to the U.S. norms than other arbitrators. See the *curriculum vitae* of Michel G. Picher, posted on the Sport Dispute Resolution Centre of Canada, online: <<http://www.crdsc-sdrcc.ca/documents/eng/2008MichelPicherFullCV.pdf>>.

<sup>52</sup> Among the members of US<sub>(1)</sub>, 13 decisions are also member of Picher<sub>(2)</sub> and 2 decisions are members of Picher<sub>(3)</sub>.

<sup>53</sup> Among the members of US<sub>(2)</sub>, 23 decisions are also member of Picher<sub>(2)</sub> and 7 are members of Picher<sub>(3)</sub>.

of Picher<sub>(1)</sub> or Picher<sub>(2)</sub> – even in the absence of traceability to an American source – is positively correlated with infection status.

The data shows that there is indeed such a “Picher effect”, though it is not as pronounced as the other indicators of infection. There are 21 decisions in Picher<sub>(2)</sub> and Picher<sub>(3)</sub> that cannot be traced to American sources and of those, 13 are infected, which gives a prevalence of 61.90%. The prevalence among the remaining decisions (that is, those that cannot be traced to either a decision by Arbitrator Picher, nor an American source) is almost eight percentage points lower, at 49.41%.<sup>54</sup> What this tells us is that – quite apart from the decisions in which he cites American sources – Arbitrator Picher acts as a source of infection.

### **3. Accounting for Resistance and Alternate Strains**

In the first section of this chapter, I traced an epicurve that was consistent with a propagating epidemic. In the second section, I measured this propagation directly and confirmed a number of hypotheses about the infection routes taken by the U.S. norms. Though the correlations between traceability to a source of infection and infection status were positive, the data still left us with two unanswered questions. First, how is it that some decisions that were in contact with a source of infection managed to remain uninfected? Second, where did the infected decisions that could *not* be traced acquire their infection? In this section, I attempt to answer these questions.

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<sup>54</sup>  $n=42$  (out of a population of 85).



### 3.1. *Resistance*

I call “resistant” any decision that has been in contact with a source of infection and nevertheless stays uninfected. In the study population, 6.42% of the decisions were resistant in this way.<sup>55</sup>

It should be noted that these are *not* decisions in which the U.S. norms that I identified as spreading epidemically in Canada were considered and then rejected. Recall that the operationalized notion of infection covers cases of mere mention, and thus such decisions would be counted among the infectives.<sup>56</sup> Resistant decisions are thus decisions related to drug testing that are traceable to U.S. sources (or to those decisions that cite U.S. sources) and yet do not mention the U.S. norms.

The distribution of properties of the resistant decisions (*e.g.* industry, jurisdiction, tribunal) was not so different from the general population as to generate hypotheses to explain their resistance. I therefore investigated the *contents* of the decisions.

Reading the resistant decisions revealed that, in some cases, the question of drug testing was incidental or ancillary to the matter at bar. Those decisions in which drug testing *was* a central issue looked at forms of drug testing that were identified as not having been transmitted to Canada. These included mass-testing

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<sup>55</sup>  $n=12$ .

<sup>56</sup> See s. 2.1 of Chapter 5.

for all employees,<sup>57</sup> random or periodic drug testing of employees in particular job categories,<sup>58</sup> and mandatory pre-employment screening of job candidates.<sup>59</sup>

Recall that from the very beginning of the Canadian jurisprudence, adjudicators have rejected both mass testing and random testing.<sup>60</sup> For example, in the *Hutchinson* decision, Arbitrator Picher stated:

[I]t is not within the legitimate business purposes of an employer, including a railroad, to encroach on the privacy and dignity of its employees by subjecting them to random and speculative drug testing.<sup>61</sup>

Similarly, pre-employment testing, though widespread in the United States, did not form part of the model that spread across the Canadian jurisprudence. First, because labour arbitrators, who rendered the earliest decisions and who rendered the bulk of the decisions in the population, do not have jurisdiction *ratione personae* over workers until after they are hired, and second because it was rejected by Canadian courts.<sup>62</sup>

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<sup>57</sup> See e.g. *Dichiara v. Anwest Transport* [2001] C.L.A.D. 43 (Quicklaw).

<sup>58</sup> See e.g. *Walker v. Imperial Oil Ltd.*, (1998) 560 A.R. 325, 1998 ABQB 785, [1998] A.J. No. 1252; *Autocars Orléans Express inc. c. Union des employés et employées de service, section locale 800 (grief de Croteau)*, D.T.E. 2004T-3,-[2004] C.L.A.D. no 325.

<sup>59</sup> See e.g. *Weyerhaeuser Co. (c.o.b. Trus Joist) v. Ontario (Human Rights Commission)*, (2007) 279 D.L.R. (4th) 480, [2007] O.J. No. 640.

<sup>60</sup> See generally s. 2.2.1.2 of Chapter 1.

<sup>61</sup> *Hutchinson*, *supra* note 39 at 5. This position was later confirmed by several courts of appeal, notably in *Canada (Canadian Human Rights Commission) v. Toronto Dominion Bank (re Canadian Civil Liberties Assn.)*, [1998] 4 F.C. 205, [1998] F.C.J. No. 1036; *Entrop v. Imperial Oil Limited*, 2000 CanLII 16800 (On. C.A.), 50 O.R. (3d) 18, 189 D.L.R. (4th) 14, 2 C.C.E.L. (3d) 19, 37 C.H.R.R. 481, 137 O.A.C. 15; and *Section locale 143 du Syndicat canadien des communications, de l'énergie et du papier c. Goodyear Canada inc.*, 2007 QCCA 1686.

<sup>62</sup> *Entrop, ibid.* But see *Alberta (Human Rights and Citizenship Commission) v. Kellogg Brown & Root (Canada) Company*, 2007 ABCA 426 (CanLII).

These factors go some way to explaining the perceived “resistance” of some decisions. They form part of the citation network that was the mechanism of propagation of the U.S. norms, but their subject matter was outside of the set of norms that came to be accepted in Canadian law. Without bringing the entire conceptual apparatus of the model to bear on this question, we can say that the resistant decisions were infected with other norms, and that those norms failed to propagate.

### 3.2. *Infection by a Local Strain*

The obverse of the resistant decision – which cites without infection – is the decision that shows signs of infection without being implicated in the citation network of propagation. Such decisions comprise almost one-third of the infected population.<sup>63</sup> The question that arises is thus how such a significant percentage of the population could be infected without having been in contact directly or indirectly with the original reservoir.

The answer lies in the *type* of infection. Of the infected but non-citing population, 90.47% were only coded for REINSTATEMENT.<sup>64</sup> Furthermore, the absence of citations in the remaining four decisions exhibiting a different in-

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<sup>63</sup>  $n=42$  (33.07%).

<sup>64</sup>  $n=38$  (this subgroup thus accounts for 65.52% of all of the decisions that are coded uniquely for REINSTATEMENT).

fection code can be accounted for individually.<sup>65</sup> There appears to be thus a uniquely “local strain” – consisting of decisions in which drug testing is allowed in the context of reinstatement – that is unrelated to the epidemic of U.S. norms.

This is consistent with the jurisprudence and commentary on so-called “conditional reinstatement” or “last chance” agreements. A close look at the authorities in which such agreements are discussed show that there are in fact two different types, of which one is not an “agreement” *per se*. What they share, however, is a history of application in Canada in cases of discharge related to alcohol abuse. It is this alcohol-related jurisprudence that forms the basis of the local strain of the drug testing virus.

The first kind of last-chance agreement is negotiated by the union and the employer as an alternative to the discharge of an employee for misconduct such as chronic absenteeism. The employer literally gives the employee “one last chance” to reform his or her conduct. In exchange, however, the employee must agree to be governed by working conditions that are not found in the collective

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<sup>65</sup> *CHEP Canada Inc. and Teamsters Local Union No. 31 (Finnigan Grievance)*, [1997] B.C.C.A.A.A. No. 715 (coded FOR\_CAUSE, but legitimacy of testing not at bar because employee caught red-handed smoking marijuana prior to being tested); *Desjardins v. Gonnely*, 2005 BCHRT 190, [2005] B.C.H.R.T.D. No. 190 (coded POST\_ACCIDENT, but legitimacy of testing was admitted by the parties); *Neufeld (Re)*, (2005) BCLRB Decision No. B42/2005, [2005] B.C.L.R.B.D. No. 40 (coded POST\_ACCIDENT, but testing jurisprudence not relevant since it was a duty of fair representation complaint where the employee argued the union should have grieved his dismissal on purely factual grounds); *Métallurgistes unis d'Amérique, section locale 8428 et Systèmes et câbles d'alimentation Prysmian Canada ltée (grief syndical)*, [2006] R.J.D.T. 1273, AZ-50380090 (coded both POST\_ACCIDENT and FOR\_CAUSE, but testing jurisprudence was not cited as it was a preliminary award on a safeguard order where only legislation was pled).

agreement.<sup>66</sup> Often, these conditions will include a commitment to address the underlying cause of the misconduct, such as alcoholism.<sup>67</sup> Thus, for instance, an employee may be required to stay sober and provide the employer with evidence of treatment.<sup>68</sup> Though there was no jurisprudence on the matter prior to the late 1980s, commentators argued that similar reasoning should apply in the case of addiction to drugs other than alcohol.<sup>69</sup>

The second kind of conditional reinstatement is that ordered by the arbitrator at the outcome of the arbitration. These may not properly be “agreements”, though often the arbitrator’s order is in fact a ratification of a settlement negotiated by the parties and submitted to him or her.<sup>70</sup> As with “true” last-chance agreements, the jurisprudence on conditional reinstatement orders applying to alcoholic employees endorses requirements for treatment and monitoring.<sup>71</sup>

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<sup>66</sup> See Donald J. M. Brown & David Beatty, *Canadian Labour Arbitration*, 4<sup>th</sup> ed. looseleaf (Aurora ON: Canada Law Book, 2009) at s. 2:3232 (“Last-chance” agreements are a type of settlement agreement whereby discipline is withdrawn and the grievor returned to work subject to compliance with certain conditions”). See also Claude D’Aoust & Sylvain St-Jean, *Les manquements du salarié associés à l’alcool et aux drogues étude jurisprudentielle et doctrinale* (Montréal: École de relations industrielles de l’Université de Montréal, 1984) at 155-57).

<sup>67</sup> See Brown & Beatty, *ibid.* at s. 7:6122 (last chance agreements are “...recognized as a legitimate and appropriate part of an employer’s efforts to meet its duty to accommodate the needs of its disabled workers”).

<sup>68</sup> See e.g. *Kelsey-Hayes Canada Ltd. and C.A.W., Loc. 199, Re*, (1990) 12 L.A.C. (4th) 377, [1990] O.L.A.A. No. 73 (R.H. McLaren) in which the arbitrator upheld an agreement requiring attendance at Alcoholics Anonymous meetings [*Kelsey-Hayes*].

<sup>69</sup> D’Aoust & St-Jean, *supra* note 66 at 157-58.

<sup>70</sup> See e.g. *Ivaco Rolling Mills and U.S.W.A., Local 7940 (Re)*, [1992] O.L.A.A. No. 636, 26 C.L.A.S. 410 (Daniel Lavery).

<sup>71</sup> See e.g. *Molson’s Brewery (Ontario) Ltd. and United Brewery Workers, Local 304 (Re)*, (1983) 12 L.A.C. (3d) 313, [1983] O.L.A.A. No. 67 (B. L. Adell), in which the arbitrator ordered the grievor to refrain from drinking entirely and to provide documentation from a treatment clinic demonstrating his ongoing participation in a rehabilitation programme.

From this longstanding caselaw, it was but a small and logical step to include drug testing as part of the ongoing treatment and monitoring that forms part of the conditions of reinstatement (whether ordered or agreed upon). There is even one decision from prior to the study period that takes this step. In *Steinberg v. Teamsters*,<sup>72</sup> the grievor was discharged due to excessive absenteeism related to marijuana use. In that decision, the board of arbitration noted:

We were not advised of any previous arbitration award involving an employee who has apparently freed himself from an addiction to marijuana. There are, however, a number of reported arbitration awards where individuals whose alcoholism had resulted in excessive absenteeism were conditionally reinstated because they had apparently freed themselves from their alcohol addiction.<sup>73</sup>

The conditions under which the board went on to reinstate the grievor included the following:

[T]he grievor must at all times refrain from using marijuana or other derivatives of the cannabis plant. This condition recognizes that the grievor's past failure to attend at work regularly was the result of his inability to restrict his intake of the drug to small amounts which would not impact on his responsibilities to his employer. *So as to enable the company to ensure compliance with this requirement, should it suspect that it is not being met, the company can require the grievor to supply it, as quickly as is reasonably possible, with a urine sample for analysis. The company is not to require such a sample more frequently than once a month.*<sup>74</sup>

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<sup>72</sup> *Steinberg Inc. v. Teamsters Union, Local 419 (Discharge Grievance)*, (1985) 23 L.A.C. (3rd) 193, [1986] O.L.A.A. No. 2 (I. Springate) [*Steinberg* cited to O.L.A.A.].

<sup>73</sup> *Ibid.* at ¶ 21.

<sup>74</sup> *Ibid.* at ¶ 23.

The *Steinberg* decision is rarely cited in the study population, but of the three infected decisions coded for REINSTATEMENT that do cite it, one is from the “local strain” group.<sup>75</sup> The other decisions in the line of conditional reinstatement cases are also rarely cited, but when they are, the “local strain” group is over-represented.<sup>76</sup>

The evidence is thus fairly strong that there developed in Canada a jurisprudence treating the issue of drug testing as a condition of reinstatement and that this development was independent from the epidemic norms that spread from the United States. This jurisprudence was occasionally cited by those decisions infected with the American reinstatement norms, though it was generally thought that the Canadian last-chance agreement jurisprudence was not relevant to the question of the legality of drug testing in general.<sup>77</sup>

The existence of a local strain explains the remaining question raised by the analysis of the data on propagation, namely the existence of a set of decisions

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<sup>75</sup> *Fiberglas Canada Inc. v. Amalgamated Clothing and Textile Workers, Local 1305 (Contini Grievance)*, (1989) 5 L.A.C. (4th) 302, O.L.A.A. No. 1.

<sup>76</sup> *Kelsey-Hayes*, *supra* note 70 is cited by two infected decisions, of which one is outside of the citation network entirely (*Norbord Industries Inc. v. Industrial Wood and Allied Workers of Canada, Local 1-2995 (Gravel Grievance)*, (1997) 67 L.A.C. (4th) 205, [1997] O.L.A.A. No. 825) and the other has no connection to the U.S. decisions (*Communications, Energy and Paperworkers Union of Canada and Bell Canada (Vanroessel Grievance)*, [1996] C.L.A.D. No. 1093), which cites one of Arbitrator Picher’s decisions that does not cite American sources).

<sup>77</sup> See, e.g. Perreault, Réaume & Simon-Pierre Paquette. “Le dépistage d’alcool et de drogues en entreprise : où en sommes-nous?” in *Développements récents en droit du travail*, vol. 267 (Cowansville, QC: Yvon Blais, 2007) 3 at 23-24 (claiming the last-chance jurisprudence “...est d’une utilité toute relative... puisque le salarié se trouvait à consentir expressément à subir ces tests pour garder son emploi.”).

that appear to have not had opportunity for the kind of contact that causes infection and yet demonstrate an apparent symptom.

#### **4. Conclusions**

In this chapter, I have shown how the propagation hypotheses set out in terms of the epidemiological model can be refined and tested against real world data.

The results of this exercise are positive. The intuitions about contagion and spread that underpinned the viral metaphor in Chapters 1 and 2, and which were refined into quite specific hypotheses in the modelling process in Chapters 3 and 4, were confirmed by an analysis of the data set constructed in Chapter 5.

To recap: the data generated by the model strongly supports the following hypotheses:

- (1) The law (broadly understood) in the U.S. forms a common reservoir of employment drug testing norms, some of which were transmitted to Canadian jurisprudence, and citation is evidence of this process.
- (2) Those norms transmitted from the U.S. then propagated across the Canadian jurisprudence through a process of serial transfer – that is, by Canadian decisions citing other Canadian decisions without direct reference to American sources.
- (3) The number of Canadian decisions infected with the U.S. norms by serial transfer increased relative to the number of decisions infected by direct citation to American sources. The “tipping point” occurred in 2002,



when the total number of serial transfer infections surpassed the total number of reservoir contact infections.

- (4) The transportation industry and notably the railway industry was an important point of contact between the reservoir and the Canadian population. Decisions from that industry thus acted as a kind of vector population.
- (5) Arbitrator Michel G. Picher was an important vector of transmission from the U.S. Even decisions rendered by Arbitrator Picher that did not directly cite American sources were implicated in cases of serial transfer.
- (6) Resistant decisions – those that cited American sources without becoming infected with the studied norms – are evidence of the failure of some *other* U.S. norms to take hold in Canada.
- (7) There is an autonomous local strain of Canadian drug testing norms that is concerned with drug testing as part of the process of rehabilitating terminated employees, but not with the right for employers to require drug testing *per se*.

Taken together, these statements explain how the U.S. norms were transmitted to Canada, despite the absence of co-ordinated harmonization efforts and the failure of Canadian authorities to effect a legal transplant.



## CONCLUSION

This thesis started with a problem: how to explain the unintentional transmission of legal norms across jurisdictional boundaries. The solution that I proposed to this problem was to expand the roster of metaphors of legal norm transmission to include viral or epidemic transmission and then to construct and test a model derived from that metaphor. The results produced by the model support the claims that I set out to demonstrate.

First, I showed unequivocally that the norms that comprise the so-called “Canadian model” of employment drug testing were transmitted here from the United States and then spread across the jurisprudence. The empirical data generated by operationalizing the model confirmed that the initial point of contact was the transportation industry. In every single test, the probability that a decision contained references to the U.S. norms was higher if that decision could be traced to American sources. Of particular note is the evidence that the norms spread epidemically: the probability of infection was significantly higher even in decisions that did not directly cite American sources, but which cited decisions that in turn cited those sources. Furthermore, the hypothesis that Arbitrator Michel G. Picher acted as a vector of transmission was confirmed. As predicted, citation to decisions rendered by Arbitrator Picher was positively correlated with infection even when no other link to American sources was apparent. The data generated by the model also led to unanticipated discoveries, notably the existence of a distinct

strain of Canadian drug testing norms that developed without reference to those transmitted from the United States.

Second, I validated the pertinence and robustness of an epidemiological model of legal norm transmission. Besides allowing me to test and confirm specific hypotheses, the process of modelling and the operationalization of the resulting model clarified what might be meant by spread of legal norms as well as some of the difficulties involved in identifying whether a legal norm was or was not transmitted. Such conceptual clarity has the advantage of putting us in a much better position to evaluate claims that a norm spread from one jurisdiction to another. Having transposed some epidemiological concepts to the legal realm and having seen both the possibilities and the limits of such transposition equips us to critically appraise other purported instances of norm transmission.

Some of the richness of the viral spread metaphor was lost in the modelling process. In particular, my decision to drop virology as a secondary domain in order to focus on epidemiology restricted the scope of the model.<sup>1</sup> As I argued in Chapter 2, much of the persuasiveness of metaphors comes from the fact that they rely on “proverbial” knowledge of the primary domain. Thus, part of the initial attractiveness of the viral spread metaphor came from how we imagine a virus to act. Viruses, bacteriophages in particular, hijack the cells of the host organism to serve as the means for reproducing more virus. We might say the same thing about the drug testing virus, which appears to have hijacked pre-existing

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<sup>1</sup> See the introduction to Chapter 3.

structures of justification in Canadian labour and human rights jurisprudence for its own reproduction.<sup>2</sup> This, and the other analogies that spring to mind such as legal antibodies (pre-existing features of the host legal system that render it less susceptible to infection by particular norms), vaccines (features intentionally introduced into the host legal system to immunize it from hostile norms), and so forth, were not systematized in the model. This is not to say that these intuitions about how thinking about viruses can be transposed to thinking about legal phenomena must necessarily be jettisoned; simply that their exclusion from the modelling process was part of the price to pay for its robustness and precision.

Indeed, the success of the epidemiological model combined with the array or intuitions that were not systematized is evidence for the richness of the viral metaphor. Mapping just one subset of the concepts brought to mind by the viral metaphor to the legal domain generated useful data and explanations. This suggests that other elements of the viral metaphor could also be extended into models. As I maintained in Chapter 3, a model calling on the base domain of virology rather than epidemiology may provide a rigorous account of how exactly transmitted norms take hold in a host. It might then be possible to integrate the viral and epidemiological models, providing a unified picture of the mechanisms at work in norm transmission from the macro level of the population right down to the micro level of the organism. Such a unified theory is a promising direction for future research.

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<sup>2</sup> See s. 2.3 in Chapter 1.

Third, I confirmed the important role that metaphors and models play in generating explanations about legal phenomena. I set out to show that explanatory metaphors may be systematized into models by mapping concepts from another domain onto the domain of law. The construction of the epidemiological model is an example of this process of systematization. Thus, quite apart from its role in explaining the phenomenon under investigation, the construction of the epidemiological model served as an exercise to demonstrate the validity of the theoretical approach.

The model building methodology also has an important critical role. In building the model, I did *explicitly* what many theorists do *implicitly*. The methodology I deployed requires a candid exposition and explicit defence of the concepts that are mobilized. Having gone through this process we are more alert to the fact that *choices* are made, not only in modelling, but in all theory construction. Consequently, we are in better equipped to evaluate the choices – often tacit – made in other theories. In the particular case of modelling, which is the undeclared methodology of much interdisciplinary research, recognizing the metaphor at the root of a model is the first step in mounting a critique. Having done so, we can ask relevant questions about the choice of primary and secondary domains and the choice of mapping functions between their analogous concepts.

\* \* \*

The transplant metaphor is concerned with how a legal system acquires new norms. The harmonization metaphor is concerned with how existing norms can be transformed. In both cases, the metaphor serves as a framework that allows us attempt to explain legal change. The epidemiological model derived from the viral metaphor is another such framework.

I do not intend for the epidemiological model to supplant the transplant and harmonization metaphors (and their derivatives) in explaining legal change. For one, it is possible that each of these metaphors could be extended into a model, and thus the modelling methodology is not in itself an advantage of the epidemiological approach *vis-à-vis* other approaches.<sup>3</sup> Moreover, the epidemiological model is particularly well-suited to cases of transmission in the absence of legislative action. The transplant and harmonization accounts remain compelling frameworks for understanding instances of explicit and intentional legal change.

Certainly the epidemiological model can be applied elsewhere. Other cases of unintentional norm transmission across jurisdictions may lend themselves to such an analysis. Areas of law in which constructing large citation networks with existing tools is feasible and in which a newly appearing norm is expressed in a canonical formulation would be especially well-suited. I do not think, however, that the value of the model or of its contribution to understanding legal phenomena can be reduced to its capacity for transposition and reapplication.

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<sup>3</sup> The resulting models would undoubtedly suffer from the same kinds of limits as the epidemiological model. Some concepts would translate less well between primary and secondary domains and certainly much richness would be lost in favour of a kind of precision that introduces its own set of challenges.

Finally, I dare assert with some measure of conviction that in addition to the theoretical insights it contains, this thesis contributes to our understanding of the strange and circuitous paths that led to the current legal regime covering employment drug testing in Canada. Canadian jurisprudence was struck by an epidemic, the precise measurement of which is both difficult and revealing. The norms governing employment drug testing were not transplanted to Canada, nor were they a consequence of harmonization; they spread here.



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## APPENDIX I: DATA SOURCES

<b>QuickLaw Data Sources .....</b>	<b>I-3</b>
All Labour Arbitration Awards .....	I-3
All Labour Relations Board Decisions .....	I-4
All Employment Law Tribunal Decisions .....	I-5
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## 1. QuickLaw Data Sources

### 1.1. *All Labour Arbitration Awards*

#### **Content summary:**

All Labour Arbitration Awards is a group source which contains collections of arbitration awards (both full-text awards and digests) pertaining to collective agreement grievances in unionized workplaces under federal jurisdiction (Canada Labour Code) and from all provinces and territories except Quebec and Nunavut.

#### **Publisher:**

LexisNexis Canada

#### **Sources:**

- Alberta Grievance Arbitration Awards
- Alberta Grievance Arbitration Awards Index
- British Columbia Collective Agreement Arbitration Awards
- Canada Labour Arbitration Decisions
- Labour Arbitration Xpress Case Summaries
- Manitoba Grievance Arbitration Awards
- New Brunswick Labour Adjudication Awards
- Newfoundland and Labrador Labour Arbitration Awards
- Northwest Territories Labour Arbitration Awards
- Nova Scotia Labour Arbitration Awards
- Ontario Grievance Settlement Board Decisions
- Ontario Labour Arbitration Awards
- Prince Edward Island Labour Arbitration Awards
- Saskatchewan Labour Arbitration Awards
- Yukon Labour Arbitration Awards

1.2. *All Labour Relations Board Decisions*

**Content summary:**

All Labour Relations Board Decisions is a group source which contains collections of labour relations decisions (both full-text awards and digests) from federal and provincial authorities.

**Publisher:**

LexisNexis Canada

**Sources:**

- Alberta Labour Relations Board Decisions Index
- Alberta Labour Relations Board Reports
- British Columbia Labour Relations Board Decisions
- Canada Industrial Relations Board Decisions
- Canada Public Service Labour Relations Board Decisions
- Canadian Artists and Producers Professional Relations Tribunal Decisions
- Décisions de la Commission des relations de travail dans la fonction publique du Canada
- Décisions de la Commission des relations du travail du Québec
- Décisions du Conseil canadien des relations industrielles
- Décisions du Tribunal canadien des relations professionnelles artistes-producteurs
- Décisions du Tribunal du travail du Québec
- Manitoba Labour Board Decisions
- New Brunswick Industrial Relations Board Decisions
- New Brunswick Labour and Employment Board Decisions
- New Brunswick Public Service Labour Relations Board Decisions
- Newfoundland and Labrador Labour Relations Board Decisions
- Nova Scotia Labour Relations Board Decisions
- Ontario Labour Relations Board Decisions
- Ontario Labour Relations Board Reports
- Prince Edward Island Labour Relations Board Decisions
- Saskatchewan Labour Relations Board Decisions

### 1.3. *All Employment Law Tribunal Decisions*

**Content summary:**

All Employment Law Tribunal Decisions includes decisions relative to non-union employment matters from quasi-judicial tribunals. It includes the nature of the employment relationship, master and servant, employment contracts, vicarious liability of employers, duties of employees, remuneration for lost employment, damages for loss of services, wrongful dismissal or termination, pay equity and workplace discrimination, non-unionized public and civil servants, and the authority and jurisdiction of administrative bodies tasked with overseeing employment relationships.

**Publisher:**

LexisNexis Canada

**Sources:**

Quicklaw does not list the sources for this set. At a minimum, given Quicklaw's available sources, it can be assumed to include relevant decisions from the following sources:

- British Columbia Employment Standards Tribunal Decisions
- Alberta Employment Standards Umpire DecisionsRemove
- Manitoba Labour Board Decisions
- Ontario Employment Standards Adjudication Decisions
- New Brunswick Employment Standards Tribunal Decisions
- Canada Public Service Staffing Tribunal Decisions

*1.4. All Human Rights Tribunal Decisions*

**Content summary:**

There is no pre-made aggregate source for this in Quicklaw. I constructed it using the combined sources option and including all available English language human rights tribunal decisions and case reporters.

**Publisher:**

LexisNexis Canada

**Sources:**

- Canadian Human Rights Tribunal Decisions
- British Columbia Human Rights Tribunal Decisions
- Manitoba Human Rights Boards of Adjudication Decisions
- Ontario Human Rights Tribunal Decisions
- New Brunswick Human Rights Board of Inquiry Decisions
- Nova Scotia Human Rights Boards of Inquiry Decisions
- Prince Edward Island Human Rights Panel Decisions
- Newfoundland and Labrador Human Rights Boards of Inquiry Decisions
- Yukon Human Rights Boards of Adjudication Decisions
- Canadian Human Rights Law Digest

### 1.5. *Judgements of all Courts of General Jurisdiction*

**Content summary:**

There is no pre-made aggregate source for this in Quicklaw as the “All Canadian Court Cases” is overbroad (including, for instance, Tax Court of Canada judgements and specialised reporters). I constructed it using the combined sources option and including all available English language judgements of all provincial, federal and territorial courts of general jurisdiction, including courts of appeal.

**Publisher:**

LexisNexis Canada

**Sources:**

- British Columbia and Yukon Judgments
- Alberta Judgments
- Saskatchewan Judgments
- Manitoba Judgments
- Ontario Judgments
- New Brunswick Judgments
- Nova Scotia Judgments
- Prince Edward Island Judgments
- Newfoundland and Labrador Judgments
- Federal Court Judgments
- Northwest Territories Judgments
- Nunavut Judgments
- Supreme Court of Canada Judgments

## 2. Azimut Data Sources

### **Content summary:**

Since Azimut does not have the same sources options as Quicklaw in its full-text database, I individually added all of the sources containing decisions of general law, labour and employment, and human rights.

### **Publisher:**

Société québécoise pour l'information juridique

### **Sources:**

- Cour d'appel fédérale et Cour fédérale
- Cour d'appel du Québec
- Cour supérieure
- Cour du Québec - Chambre civile
- Cour du Québec - Division administrative et d'appel
- Cour du Québec - Division des petites créances
- Tribunal des droits de la personne
- Commissaire du travail
- Commission de la fonction publique
- Commission des relations du travail
- Conseil canadien des relations industrielles/Conseil canadien des relations du travail
- Conseil d'arbitrage de la construction
- Tribunal canadien des droits de la personne (1re instance et appel)
- Tribunal d'arbitrage
- Tribunal d'arbitrage (artistes)
- Tribunal de la dotation de la fonction publique
- Tribunal des professions
- Tribunal du travail



## APPENDIX II: LIST OF CASES IN THE POPULATION

- Accuride Canada Inc. v. National Automobile, Aerospace, Transportation and General Workers Union of Canada (CAW-Canada), Local 27 (Bishop Grievance)*, (2006) 154 L.A.C. (4th) 300, [2006] O.L.A.A. No. 569.
- ADM Agri-Industries Ltd. v. National Automobile, Aerospace, Transportation and General Workers' Union of Canada (CAW-Canada), Local 195 (Substance Abuse Policy Grievance)*, [2004] C.L.A.D. No. 610.
- AFG Industries and United Steelworkers of America, Local 295 (Aluminum, Brick and Glass Workers' Union) (Wilson Grievance)*, [1999] O.L.A.A. No. 135.
- AFG Industries Ltd. v. Aluminum, Brick and Glass Workers International Union, Local 295G (Botcher Grievance)*, [1998] O.L.A.A. No. 922.
- AFG Industries Ltd. v. Aluminum, Brick and Glass Workers International Union, Local 295G (O'Keefe Grievance)*, [1998] O.L.A.A. No. 291.
- Air Canada v. International Assn. of Machinists and Aerospace Workers, Transportation District 140 (MacRae Grievance)*, [2001] C.L.A.D. No. 382.
- Alberta (Human Rights and Citizenship Commission) v. Kellogg Brown & Root (Canada) Co.*, 2006 ABQB 302, 267 D.L.R. (4th) 639, [2006] A.J. No. 583.
- Alberta (Human Rights and Citizenship Commission) v. Kellogg Brown & Root (Canada) Co.*, 2007 ABCA 426, 289 D.L.R. (4th) 95, [2007] A.J. No. 1460.
- Algoma Tubes Inc. v. United Steelworkers of America, Local 8748 (Smith Grievance)*, (2006) 88 C.L.A.S. 200, [2006] O.L.A.A. No. 768.
- Amalgamated Transit Union, Local 583 v. Calgary (City) (Carp Grievance)*, [2004] A.G.A.A. No. 75.
- Assn. of Postal Officials of Canada v. Canada Post Corp. (Wing Grievance)*, [2002] C.L.A.D. No. 400.
- Autocars Orléans Express inc. c. Union des employés et employées de service, section locale 800 (grief de Croteau)*, D.T.E. 2004T-3,-[2004] C.L.A.D. no 325.
- Beauchamp v. Ottawa Motor Express*, [2005] C.L.A.D. No. 70.
- Bell Canada v. Communications and Electrical Workers of Canada (Fitzpatrick Grievance)*, [1994] C.L.A.D. No. 616.
- Bellerose v. Maritime Marine Services Ltd.*, [2005] C.L.A.D. No. 232.

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- Teamsters, Local 938 v. Cabano-Kingsway Transport (Penney Grievance)*, [2001] C.L.A.D. No. 675.
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*Trans-Frt. McNamara v. Godin*, [2004] C.L.A.D. No. 55.

*Trans-Power Construction Ltd. and International Brotherhood of Electrical Workers, Local 258*, [1999] B.C.C.A.A.A. No. 51.

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*Vaillancourt et Métal 7 inc.*, 2007 QCCRT 0280D.T.E. 2007T-569, AZ-50436370.

*Vancouver Shipyards Co. v. United Assn. of Journeymen and Apprentices of the Plumbing and Pipefitting Industry, Local 170*, (2006) 156 L.A.C. (4th) 213, [2006] B.C.C.A.A.A. No. 186.

- Vancouver Shipyards Co. v. United Assn. of Journeymen and Apprentices of the Plumbing and Pipefitting Industry, Local 170 (Moore Grievance)*, [2005] B.C.C.A.A.A. No. 296.
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- Village of Cache Creek v. International Union of Operating Engineers, Local 115C (Cassidy Grievance)*, (2002) 105 L.A.C. (4th) 97, [2002] B.C.C.A.A.A. No. 79.
- Walker v. Imperial Oil Ltd.*, (1998) 560 A.R. 325, 1998 ABQB 785, [1998] A.J. No. 1252 (Quicklaw).
- Westhore Terminal Ltd. v. International Longshore and Warehousemen's Union, Local 502 (Cropper Grievance)*, (2006) 88 C.L.A.S. 232, [2006] B.C.C.A.A.A. No. 242.
- Westmin Resources Limited and National Automobile, Aerospace and Agricultural Implement Workers Union of Canada (Caw-Canada), Local 3019*, (1995) BCLRB No. B113/95, [1995] B.C.L.R.B.D. No. 104.
- Westmin Resources Ltd. v. Canadian Auto Workers Canada, Local 3019 (Lamarche Dismissal Grievance)*, (1994) 46 L.A.C. (4th) 405, [1994] B.C.C.A.A.A. No. 397.
- Weyerhaeuser Co. (c.o.b. Trus Joist) v. Ontario (Human Rights Commission)*, (2007) 279 D.L.R. (4th) 480, [2007] O.J. No. 640.



## APPENDIX III: VARIABLES DATA TYPES AND CODES

<b>Variables and Data Types .....</b>	<b>III-3</b>
Case Name .....	III-3
Case Reporter Reference .....	III-3
Database Reference.....	III-3
Netural Citation .....	III-4
Tribunal.....	III-4
Jurisdiction.....	III-4
Author .....	III-5
Date of Hearing.....	III-5
Date Rendered .....	III-5
Industry .....	III-5
Reference to American Sources .....	III-6
Citation to Picher Decisions.....	III-6
<b>Codes .....</b>	<b>III-7</b>
Norms .....	III-7
Reservoir & Vector .....	III-8





## 1. Variables and Data Types

This section describes each of the variables created in QDA Miner.

### 1.1. *Case Name*

Name: CASE\_NAME  
 Description: Name of the case as it appears in caselaw reporter. Where there is a difference between the full name of the case and the name under which it is indexed the “indexed as” name is used.  
 Data type: String  
 Format: None  
 Null value accepted: No

### 1.2. *Case Reporter Reference*

Name: REF\_PAPER  
 Description: Reference for citation to a case reporter (if any). If the case was published in more than one case reporter the official reporter is preferred followed by a sem-official or specialized reporter followed by a case summary reporter.  
 Data type: String  
 Format: None  
 Null value accepted: Yes

### 1.3. *Database Reference*

Name: REF\_DATABA  
 Description: Reference for citation to an electronic database. If the case was made available in more than one database Quicklaw was used for English decisions and Azimut for French decisions regardless of jurisdiction.  
 Data type: String  
 Format: None  
 Null value accepted: Yes

*1.4. Neutral Citation*

Name: REF\_NEUTRA  
 Description: Neutral citation reference if available.  
 Data type: String  
 Format: None  
 Null value accepted: Yes

*1.5. Tribunal*

Name: TRIBUNAL  
 Description: Tribunal that rendered the decision  
 Data type: Closed list  
 Format: N/A  
 Null value accepted: No  
 Accepted values: Arbitration  
 Labour Board  
 Human Rights Tribunal  
 Employment Adjudication Board  
 Public Service Board  
 Superior Court  
 Court of Appeal

*1.6. Jurisdiction*

Name: JURIS  
 Description: Jurisdiction of the tribunal that rendered the decision  
 Data type: Closed list  
 Format: N/A  
 Null value accepted: No  
 Accepted values: Federal  
 BC  
 AB  
 SK  
 MB  
 ON  
 QC  
 NB  
 NS  
 PEI  
 NF  
 YK  
 NU  
 NWT

*1.7. Author*

Name: AUTHOR  
 Description: Name of the person who rendered the decision  
 Data type: String  
 Null value accepted: No  
 Format: Last name Initials

*1.8. Date of Hearing*

Name: HEARD  
 Description: Date of hearing ( if indicated). In the case of multiple hearing dates the last date of hearing is used. In cases where it is indicated that therer were pleadings in writing or supplemental materials were filed by the parties the date of receipt of these documents is used (if indicated).  
 Data type: Date  
 Null value accepted: Yes  
 Format: YYYY/MM/DD

*1.9. Date Rendered*

Name: RENDERED  
 Description: Date that the decision was rendered.  
 Data type: Date  
 Null value accepted: No  
 Format: YYYY/MM/DD

*1.10. Industry*

Name: INDUSTRY  
 Description: Industry of the workplace from whence the litigation leading to the decision arose.  
 Data type: Closed list  
 Format: N/A  
 Null value accepted: No  
 Accepted values: CONSTRUCTION  
 FORESTRY  
 MANUFACTURING  
 MINING  
 OIL & GAS  
 PUBLIC  
 OTHER

*1.11. Reference to American Sources*

Name: CITE\_US1  
 Description: Whether the case cites an American source. If the code U.S. > 0, then CITE\_US1=true.  
 Data type: Boolean  
 Default value: False

Name: CITE\_US2  
 Description: Whether the case cites a case that cites an American source.. If the case has a CITE\_US1=false and cites a case that has a CITE\_US1=true then it is CITE\_US2=true.  
 Data type: Boolean  
 Default value: False

Name: CITE\_US3  
 Description: Whether the case cites a case that cites a case that cites an American source.. If the case has both CITE\_US1=false and CITE\_US2=false and cites a case that has a CITE\_US2=true then it is CITE\_US3=true.  
 Data type: Boolean  
 Default value: False

*1.12. Citation to Picher Decisions*

Name: PICHER\_2  
 Description: Whether the case cites a decision rendered by Arbitrator Michel G. Picher. If the decision is code Picher < 1 and it cites a decision that has code Picher >1, then PICHER\_2=true.  
 Data type: Boolean  
 Default value: False

Name: PICHER\_3  
 Description: Whether the case cites a decision that cites a decision rendered by Arbitrator Michel G. Picher. If the decision has a code Picher < 1 and is Picher\_2=false and it cites a decision that is PICHER\_2=true, then Picher\_3=true  
 Data type: Boolean  
 Default value: False

## 2. Codes

### 2.1. Norms

**Code name:** FOR\_CAUSE

**Description:** References to the norm authorizing an employer to require a urine drug test upon having cause to believe that the employee is impaired by drugs or alcohol at work.

**Associated Keywords:**

FOR_CAUSE	REASON_TO_BELIEVE	BONNES_RAISON
REASONABLE_CAUSE	MOTIF	BONNE_RAISON
REASONABLE_GROUNDS,	MOTIFS	RAISON_VALABLE
PROBABLE_GROUNDS	MOTIF_RAISONNABLE	
GOOD_REASON	MOTIFS_RAISONNABLES	

**Code name:** POST\_ACCIDENT

**Description:** References to the norm authorizing an employer to require a urine drug test following a workplace incident.

**Associated Keywords:**

POST-ACCIDENT,	NEAR_MISS	ACCIDENT_DE_TRAVAIL
POST-INCIDENT,	NEAR-MISS	SUITE_D'UN_ACCIDENT
SIGNIFICANT_ACCIDENT,	WORKPLACE_ACCIDENT,	INCIDENT_LIÉ_AU_TRAVAIL
SIGNIFICANT_INCIDENT	WORKPLACE_INCIDENT	

**Code name:** REINSTATEMENT

**Description:** References to the norm authorizing an employer to require urine drug testing as a condition of reinstatement of an employee absent or subject to discipline because of drug use.

**Associated Keywords:**

LAST_CHANCE_AGREEMENT	ONGOING_MONITORING
REINSTATEMENT_AGREEMENT	ENTENTE_DE_DERNIÈRE_CHANCE
REINTEGRATION_AGREEMENT,	RÉINTÉGRATION
CONDITION_OF_REINSTATEMENT	RETOUR_AU_TRAVAIL

2.2. *Reservoir & Vector*

**Code name:** U.S.

**Description:** References to or citations to sources from the United States.

**Associated Keywords:**

UNITED_STATES	DISTRICT_OF COLUMBIA	NEW_MEXICO
UNITED-STATES	D.C.	NOUVELLE_MEXIQU
ÉTATS-UNIS	FLORIDA	NEW_YORK
ETATS-UNIS	FLORIDE	NORTH_CAROLINA
ÉTATS_UNIS	GEORGIA	CAROLINE_DU_NORD
ETATS_UNIS	GEORGIE	NORTH_DAKOTA
U.S.	HAWAII	DAKOTA_DU_NORD
U.S	IDAHO	OHIO
É.-U.	ILLINOIS	OKLAHOMA
E.-U.	INDIANA	OREGON
AMERICAN	IOWA	PENNSYLVANIA
AMERICA	KANSAS	PENNSYLVANIE
AMÉRICAIN	KENTUCKY	RHODE_ISLAND
AMÉRICAIN	LOUISIANA	SOUTH_CAROLINA
AMÉRICAINES	LOUSIANE	CAROLINE_DU_SU
AMÉRICAINES	MAINE	SOUTH_DAKOTA
AMERICAIN	MARYLAND	DAKOTA_DU_SUD
AMERICAIN	MASSACHUSETTS	TENNESSEE
AMERICAINS	MICHIGAN	TEXAS
AMERICAINES	MINNESOTA	UTAH
ALABAMA	MISSISSIPPI	VERMONT
ALASKA	MISSOURI	VIRGINIA
ARIZONA	MONTANA	VIRGINIE
ARKANSAS	NEBRASKA	WASHINGTON
CALIFORNIA	NEVADA	WEST VIRGINIA
CALIFORNIE	NEW_HAMPSHIRE	VIRGINIE_DE_L'OUEST
COLORADO	NOUVELLE_HAMPSHIRE	WISCONSIN
CONNECTICUT	NEW_JERSEY	WYOMING
DELAWARE	NOUVELLE_JERSEY	

**Code name:** Picher

**Description:** References to or citations from decisions rendered by Arbitrator Michel G. Picher.

**Associated Keywords:**

PICHER	RAILROAD_ARBITRATION	75_L.A.C._(4TH)_300
CROA,	6_L.A.C._(4TH)_381	95_L.A.C._(4TH)_341
C.R.O.A.	11_L.A.C._(4TH)_364	111_L.A.C._(4TH)_328
RAILWAY_ARBITRATION	22_L.A.C._(4TH)_164	138_L.A.C._(4TH)_122